40 Rock.

POPULAR Computing WEEKLY

40p

31 May-6 June 1984 Vol 3 No 22

BRITAIN'S BEST-SELLING MICRO WEEKLY

CLASSIFIEDS START HERE

STAR GAME
Air/sea Battle on spectrum
see page 10

News Desk

What future for the Lynx now?

by Christina Erskine

THE future of the Lynx computer is in jeopardy

Manufacturer Camputers has asked its accountants to convene a meeting of creditors on June 8th

Although the company has not ceased trading, 24 members of staff — over half the employees — were made redundant last week

Managing director Stanley Charles said, "The company has been seeking additional finance for some time, and while one party has expressed an intent to ensure that the Lynx series will continue, no firm offer has been made

"It is the desire of the directors on everyone's behalf that owners are found for the project in the period between now and the creditors meeting "

Geoff Sore, Technical director of Camputers Ltd, added, "In my opinion, the Lynx will continue — the project isn't dead yet, and the company is actively looking for means for it to continue "

Camputers is rumoured to have already received a firm

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Dragon joins MSX bandwagon

DRAGON Data is soon to announce a new home computer which will conform to the Japanese MSX design standard

The company will be the first UK manufacturer to acquire a licence for the MSX system

At least seven other European manufacturers are known to be negotiating with systems house Microsoft for MSX licences — including the Dutch electronics giant Philips, which is soon expected to announce it will adopt the system

Dragon's new machine will have 64K Ram, a Z80 processor and a built-in 3½inch disc drive unit. And Dragon will work hard to get the machine out into shops like Boots before the first of the Japanese MSX machines makes its debut here in September

Commented Dragon's Managing director Brian Moore "MSX could well dominate major sections of the home computer market and comparisons with VHS and video recorders can be readily drawn "

Said Dragon's Kevin Stephens "Our view at the moment is that MSX is the way we will go If so, we will almost certainly also be doing sof-

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This Week


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31 May-6 June 1984 Vol 3 No 22

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How to submit articles
Articles which are submitted for publication should not be more than 3 000 words long. The articles, and any accompanying programs should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here — so please do not be tempted

Accuracy
Popular Computing Weekly cannot accept any responsibility for any errors in programs we publish although we will always try our best to make sure programs work.

This Week

Editorial

June will be dominated by shows this year. The Consumer Electronics Show in Chicago will be followed in short order by the Commodore Show in Hammersmith and the Computer Fair in Earls Court.

There are no intimations of any astounding new machines or peripherals, but there should be some new software on display. Commodore, which announced the 264 at Las Vegas in January – but has sat on it ever since, should at least announce its plans for the next six months.

July and August are traditionally rather lean months for the computer industry, but sales usually start in earnest in September as companies gear themselves up for the Christmas boom.

Competition is likely to intensify in the latter third of the year, with Amstrad and the MSX companies all trying to grab a slice of the lucrative micro market. The pressure will also affect software firms, some of whom are already suffering from the current surfeit of software sitting in warehouses around the country.

It is difficult to predict exactly what shape the micro market will be in six months from now, but the indications are that users will have a wider choice than ever before.

Next Thursday

Time-a-Climber for the Spectrum is next week's star game by Alan Jarvis — a mountaineering challenge. Scale the mighty peaks and admire the changing scenery.


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Dragon

continued from page 1

tware for MSX." It is not clear at this stage if Dragon will offer a hardware upgrade for the MSX machine to enable it to run the company's present range of OS9 software

GEC McMichael, Dragon's marketing arm declined to comment on the possibility of Dragon embracing the MSX standard So far, eight of Japan's largest electronics companies have opted for MSX.

● Dragon has announced that it will be bundling the Dragon 32 in two special 'starter packs' Both include a data recorder — one with Logic3's *Basic Tutor* package, the other with four game cassettes and a Rom cartridge

Camputers

continued from page 1

offer last week via its solicitors which would reinstate the staff and set out a five year plan for the company Its solicitors, Turner Kenneth Brown, however, declined to comment on the situation, and directors at Camputers said that there had been no such offer

Although the three Lynx micros (48K, 96K and 128K) have sold well overseas, particularly in France and Scandinavia, UK sales have been disappointing It is thought that this has been a major factor in Camputers' financial crisis

MSX agree on disc format

THE 10 Japanese MSX computer manufacturers have reached agreement on a common disc format

It is to be the Sony 3½inch format Said Toshiba's Chris Greet — instigator of the UK's MSX working party — "The 3½inch format has been chosen as the disc standard for MSX — which will ensure compatability for MSX disc software"

The 3½inch drives will run Microsoft's MSX disc operating system MSX DOS MSX-DOS is data compatible with MS-DOS meaning that IBM files can be exported to an MSX machine The system-calls running under MSX-DOS are also CP/M compatible

The first MSX micros with disc units are expected to go on sale in Japan in two week's time

The decision of the MSX companies to adopt a 3½inch disc standard is a blow to Hitachi, which had hoped that its own 3inch system might be chosen in preference to the Sony one

Said Hitachi UK's Alan Geekie. "A disc format standard is a fundamental part of the thinking behind MSX and it is inevitable that one of us has to lose out. Certainly it is not a problem though We will conform to whatever is adopted as the disc standard"

Hitachi's 64K MSX micro — the MB-H801 — will go on sale in the UK in September, priced under £200

Hitachi's MB-H80 machine

Valhalla goes US

VALHALLA, *the big selling Spectrum title, is now confidently expected to be available on the Commodore 64 within the next few weeks*

A production version is almost finished, with only minor 'tweaks' left to do Although the plot objectives and major features of the game are the same as the Spectrum version, Legend regard the 64 edition as slightly superior

'Obviously we've been able to do more in terms of colour graphics for the characters on the 64 and have improved the backgrounds" said Legend's John Peel "We've also speeded up the action of the game — more happens sooner — I think we're getting that bit closer to our objective of a computer movie"

In what is believed to be an unprecedented move, Legend has insured itself, reportedly with Commercial Union — for up to £2 5m, to combat the 'Star Wars syndrome' — pirated copies of the game reaching the shops before the official version The figure reflects anticipated sales in the US when a disc version of the game is issued there at Christmas One of the companies believed to be involved in the American deal is video and tv giant CBS

QL board for sale?

THE processor board from the QL may well be available in the not too distant future for sale to other systems builders

Sinclair Research and GST Computer Systems, based near Cambridge, are currently negotiating prices, quantity and delivery dates, although the final agreement is unlikely to take place until Sinclair has sorted out all its own QL delivery problems

Sinclair has yet to send out all the machines to customers given end of April deadlines for delivery

Those few customers who have so far received machines are still waiting to receive copies of the Basic manual

GOSH set up legal fund

GOSH — the Guild of Software Houses — has established a legal fund to fight software piracy

Twenty-one member companies attended a meeting held last week and pledged over £50,000 to help establish a legal precedent for software copyright.

Commented GOSH chairman Nick Alexander, "All we have to do now is find a suitable case to fight — and believe me there are plenty of deserving causes."

Donations welcome

YOU can now donate computer software cassettes to Oxfam along with the more usual clothes, books and toys

The overseas aid charity is mounting a special appeal in June and July for any personal computer software from either individuals or manufacturers and retailers The games can be donated at any one of Oxfam's 650 shops in this country

New machine from Atari

ATARI has launched a new video games machine in the US called the 7800 Prosystem

With advanced colour graphics, the machine will play any game cartridge designed for the Atari 2600 video computer It can also be expanded, with a full-stroke keyboard, into an introductory computer In addition, Atari also unveiled 13 new games designed for the 7800 Prosystem

So far there is no price available for the machine and it is not known if it will be sold in the UK

Design change

DK 'TRONICS has now modified the design of its successful add-on keyboard for the Spectrum so that it works with Interface 1 and Microdrives

The unit costs £45 Details from DK 'Tronics, Unit 6 Shire Hill Industrial Estate Saffron Walden Essex


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GALACTIC
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GREAT GAMES
MACHINE CODE

Letters

Poignant response

I thought I should write and tell readers of what could be a quite serious 'bug' in the Sinclair ZX Spectrum/ZX Interface I system. I own an issue two ZX Spectrum fitted with 48K Ram, ZX Interface 1 and one ZX Microdrive. Whilst operating the system recently, I came across a poignant response to the following and similar commands after Microdrive operation

PRINT IN 0

The response quite often, is not as expected. The system locks up and thereafter, when several keys are pressed simultaneously, faint vertical bars appear on the screen similar to the 'venetian blind effect', which plagues all Spectrum owners and is a result of Uncommitted Logic Array (ULA) problems. The only remedy is to reset the computer.

I suspect that this new effect is due to a decoding problem in the ZX Interface 1 ULA, because the error does not occur without the Interface 1 unit attached.

Perhaps other readers have witnessed the effect and some may know the actual reason for it. In either case, I am sure further correspondence on this page would be most welcome and useful.

Alan Turnbull
Cheshire

Microdrive options

I would like to comment on two letters published in *PCW*, May 3.

Ian Ferguson wrote about using the Brother EP22 and *Tasword 2* as part of a word-processing package. These two form part of my package but it may be helpful to add, for those with Interface I and possibly Microdrive(s), that the EP22 works with no problems with the RS232 built into the Interface 1 — no additional interface is required.

Uncommonly, both Sinclair and Brother have complied with the standard, and so the Sinclair lead just plugs into the printer and you're off. The only mild irritant (and the blame here lies at Sinclair's door) is that, apart from alphanumeric characters, Sinclair's character set does not comply with the ASII standard whilst Brother's does.

Helpfully, Brother publishes in its character set in a table at the back of the manual, the Hex values of each character. Don't worry about Hex conversion; just look for the Hex equivalent in the Sinclair manual and type that character instead. This doesn't work for some characters, eg, the £-sign which happens to be graphics-M. *Tasword* uses graphics characters for printer controls, but for others there is no problem. Such differences are also catered for in copying routines using the "B" stream by adding conditionals in your basic program for commonly used non-standard characters.

On the question of paper, I have found that the best and most economical answer is Brother thermal paper bought on a roll. The ribbons are very costly and, with the roll, you use just the length of paper you require. I have also found that the type is bolder and it doesn't fade as the single sheets tend to.

The question of the word-processing package leads me on the David Lowe's letter. Lucky owners of Microdrives will find that with the package described above, text files are quickly saved and retrieved. A professional package indeed. *Tasman* software are one of the few far-sighted houses that assist their customers in using the hardware they have to its full (Campbell systems is another). This is because they not only encourage and facilitate the making of back-up copies of your valuable software, but also, by providing useful notes, allow you to use your Microdrives as you intend them to be used when you ordered them.

Of course software houses have the right to protect their interests as far as commercial piracy is concerned, but their customers also have rights. Having spent a fortune on software, probably more than on my hardware, I have the right to use that software as I deem best. I do not wish to make money by copying and selling pirated software, the law of the land should cater for that, but I *do* want to load my software in seconds not fractions of an hour.

Software houses form themselves into groups to protect their interests. Come on users! We must protect our interests.

I would like to point out to David Lowe that, whilst much software is not immediately compatible, (and I support his plea for magazines to comment on compatibility), there is virtually no software that cannot be transferred — in spite of the efforts of software houses and the thoughtlessness of Sinclair.

Happy Microdriving

John Ashplant
30 Gresham Close
Enfield
Middx

Anyone who owns a ZX Microdrive will want to put their cassette software on to microdrive cartridge to speed up loading time. We would like to encourage software houses with cassette programs to include a microdrive option.

Bundles of letters

Obviously, you have been kind enough to publish our ad: the postm (oops! what a givexway!) postperson has been frantically shovelling letters into the school letter-box for the past few days, which goes to show you *do* have readers aged 11-15.

Before I start answering them, I only wanted to thank you.

F J Baynard
Section 'Patamatique
College Pierre Dubois
71 Rue Victor Boissel
53017 Laval
France

"The World Wildlife Fund couldn't help."

More hints

I would like you to print this letter just to prove to me that you read all the letters sent in by readers. This is my third.

I have been buying *PCW* for over a year now and think it is great, especially the Adventure Corner. But, I would like to see a few more program hints and tips.

C Barnes
19 Scafell Way
Clifton Est
Nottingham

Third time lucky.

Back to front

Whilst finding the bulk of your magazine very enjoyable, I now find that the first section I turn to is the puzzle on the inside back cover. Could you please tell me if there is a book of similar problems available on the market?

PS If such a book is available, I will still buy your magazine — honest.

Dave Hopkins
5 Wildbrook
Port Talbot
West Glamorgan

The book that seems ideally suited to your needs is *Brainteasers for Basic Computers* by Gordon Lee, who sets the puzzle at the back of *PCW* each week. The book costs £4.95 and is published by Shiva, 4 Church Lane, Nantwich, Cheshire.

Desk query

As a part of my 'A' level design course I am designing a computer desk/work unit with the home user in mind. At the moment I am investigating what form one of these units should adopt: whether it be an expandable system or a solid single unit.

With the consumer in mind, I am writing to ask your readers 'what would you want from a computer desk'. As I will be designing, making and possibly selling the design of this desk, I would be very grateful for any ideas.

S Plenderleith
Kirkbie Kendal School
Lound Road
Kendal LA9 7EQ



Available Now for Commodore 64

Air Sea Battle

Stay alive for as long as possible with this strategy game for Spectrum 16/48K by Gary Burrows

This is a strategy game for either model of the Spectrum. The idea is to stay alive for as many months as possible while under constant attack by enemy forces out to destroy your people. As the leader you must ensure that you have enough money to buy food and water as well as tanks, warships and jet fighters. You start with a given amount and can increase your money by building mineral sites and oil rigs and then selling your minerals and oil. If you have no tanks etc, to defend yourself then the enemy will destroy your oil rigs and mineral sites. You can only have 4 tanks, oil rigs, trucks etc, at a time.



```
   2 REM * BATTLE ZONE *
   3 REM * © G.U.Burrows *
   4 REM * 9/3/84 *
   8 REM * 48k zx spectrum *
  50 LET i$=" If not then enter n
umber (0)": LET t$="The enemy re
treats."
  52 DIM a$(9,14): FOR v=1 TO 9:
 READ v$: LET a$(v)=v$: NEXT v
  53 DIM b$(2,18): FOR v=1 TO 2:
 READ v$: LET b$(v)=v$: NEXT v
  54 DIM a(9): FOR v=1 TO 9: LET
a(v)=0: NEXT v: LET ii=20
  55 DIM b(2): FOR v=1 TO 2: LET
b(v)=0: NEXT v: LET i=20
  60 BORDER 6: PAPER 7: CLS
  70 INK 1: LET mon=0: LET po=80
: LET mo=500: LET at=0: LET a(1)
=400: LET a(2)=400: GO TO 80
  72 CLS : LET mon=mon+1
  73 IF a(8)>0 AND a(6)>0 THEN L
ET b(1)=b(1)+INT (RND*(a(8)*a(6)
)+1)
  74 IF a(7)>0 AND a(9)>0 THEN L
ET b(2)=b(2)+INT (RND*(a(7)*a(9)
)+1)
  75 FOR v=1 TO 2: LET a(v)=a(v)
-(INT (RND*25+1)): NEXT v
  76 FOR v=1 TO 2: IF a(v)>100 T
HEN LET po=po+(INT (RND*10+1))
  77 IF a(v)<=100 AND a(v)>=50 T
HEN LET po=po+INT (RND*5+1)
  78 IF a(v)<50 THEN LET po=po-(
INT (RND*10+1)): NEXT v
  79 LET i=i+4: LET ii=ii+2
  80 IF a(1)<1 OR a(2)<1 OR po<1
 THEN GO TO 350
  81 PRINT AT 1,10,"BATTLE ZONE"
  82 PRINT INK 3;AT 3,6,"( )Mont
hs",TAB 23,mon,AT 4,6,"( )Attack
s",TAB 23,at,AT 5,6,"( )Populati
on",TAB 23,po,AT 6,6,"( )Money",
TAB 23,mo
  84 FOR v=1 TO 9: PRINT TAB 8;"
(",v,")",a$(v),a(v): NEXT v
  85 PRINT TAB 5; INK 2;"(a)",b$
(1),b(1): PRINT TAB 5; INK 2;"(b
)",b$(2),b(2)
  88 PRINT : PRINT TAB 10,"PRESS
 A KEY": FOR v=1 TO 19
  90 INK 2: FLASH 1: PRINT AT v,
0,"███",AT v,29,"███": NEXT v:
FOR v=0 TO 31
  92 INK 3: PRINT AT 0,v,"█",AT
20,v,"█",AT 21,v,"█": NEXT v
  93 FLASH 0: INK 1
  94 IF RND>.7 THEN GO TO 300
 110 INPUT LINE v$: IF v$="a" OR
 v$="b" THEN GO TO 250
 114 IF v$="1" OR v$="2" OR v$="
3" OR v$="4" OR v$="5" OR v$="6"
 OR v$="7" OR v$="8" OR v$="9" T
HEN LET v=VAL (v$): GO TO 117
 115 GO TO 110
 117 BEEP .25,14: BEEP .5,10
 119 CLS : IF v<3 THEN GO TO 150
 120 GO TO 200
 150 PRINT : PRINT TAB 13,a$(v)
 152 PRINT : PRINT TAB 6,"You ha
ve ",a(v)," units.": PRINT : PRI
NT TAB 10,"Money £",mo
 154 LET r=INT (RND*2+1)
 155 PRINT : PRINT TAB 7,"One un
it costs £",r
 158 PRINT : PRINT "If you wish
to purchase more   then enter t
he number of units  you want."
 160 PRINT i$
 164 INPUT z: IF z*r>mo OR z<0 T
HEN GO TO 164
 165 LET a(v)=a(v)+z: LET mo=mo-
(z*r): PRINT : PRINT " Ok": PAUS
E 100: GO TO 72
 200 PRINT : PRINT INK 3;TAB 9;a
$(v)
 202 PRINT : PRINT TAB 9,"You ha
ve ",a(v): PRINT : PRINT TAB 9;"
Money £",mo
 203 IF v>7 THEN LET r=INT (RND*
20+1): GO TO 205
 204 LET r=INT (RND*20+ii)
 205 PRINT : PRINT TAB 5;"It cos
ts £",r," to build": PRINT INK 3
;TAB 9,a$(v)
 208 PRINT : PRINT "If you wish
to build more then  enter the nu
mber you want.": PRINT i$
 210 INPUT z: IF z*r>mo OR a(v)+
z>4 OR z<0 THEN GO TO 210
 214 LET a(v)=a(v)+z: LET mo=mo-
(z*r): PRINT : PRINT " Ok": PAUS
E 100: GO TO 72
 250 BEEP .25,14: BEEP .5,10
 251 CLS : IF v$="a" THEN LET v=
1: GO TO 254
 252 LET v=2
 254 PRINT : PRINT TAB 10,b$(v)
 255 PRINT : PRINT TAB 9,"You ha
ve ",b(v)," units.": PRINT : PRI
NT TAB 9,"Money £",mo
 256 LET r=INT (RND*5+1)
 260 PRINT : PRINT TAB 6,"Value
per unit £",r
 262 PRINT : PRINT "You can sell
 the ",b$(v): PRINT "that you ha
ve collected at the  above rate.
"
 264 PRINT "If you wish to sell
then enter  the number of units.
": PRINT i$
 266 INPUT z: IF z>b(v) OR z<0 T
HEN GO TO 266
 270 LET b(v)=b(v)-z: LET mo=mo+
(z*r): PRINT : PRINT " Ok": PAUS
E 100: GO TO 72
 300 FLASH 1: INK 2: PRINT AT 2,
26,"*": FOR c=1 TO 400: NEXT c:
INK 1: FLASH 0: CLS
 301 LET c=INT (RND*3+1)
 302 PRINT : PRINT "You are und
er attack by ",c: LET v=INT (RND
*3+3): PRINT " enemy ", INK 3,a$
(v)
 303 PRINT : PRINT AT 4,1,"You h
ave ",a(v), INK 2," ",a$(v)
 305 PRINT AT 6,1,"Enter the num
ber you wish to    use to stop t
hem."
 308 IF a(v)=0 THEN PRINT : PRIN
T INK 2," YOU HAVE NO ", INK 3,a
$(v): GO TO 320
 310 INPUT x: IF x>4 OR x>a(v) O
R x<1 THEN GO TO 310
 311 INK 3: IF x>c AND RND>.2 TH
EN PRINT : PRINT " Ok / ",: PAUS
E 100: PRINT t$: GO TO 318
 312 IF x=c AND RND>.4 THEN PRIN
T : PRINT " Ok / ",: PAUSE 100:
PRINT t$: GO TO 318
 314 IF x<c AND RND>.7 THEN PRIN
T : PRINT " Ok / ",: PAUSE 100:
PRINT t$: GO TO 318
 315 PRINT : PRINT " Ok / ",: PA
USE 100: PRINT "The attack conti
nues.": LET a(v)=a(v)-1: PAUSE 1
00: FOR r=1 TO 80
 316 PRINT AT 0,r," ": NEXT r: I
NK 1: GO TO 303
 318 LET a(v)=a(v)-1: LET at=at+
1: PAUSE 100: INK 1: GO TO 72
 320 INK 1
 321 PRINT : PAUSE 200: PRINT "
The enemy has retreated but"
 322 LET r=INT (RND*10+1)*c: PRI
NT " ",r," of the population hav
e": PRINT " been killed!": LET p
o=po-r: LET at=at+1
 324 FOR d=3 TO 8 STEP 2: IF v=d
 AND a(8)>0 THEN LET a(8)=a(8)-1
 325 NEXT d
 326 FOR d=3 TO 4: IF v=d AND a(
9)>0 THEN LET a(9)=a(9)-1
 330 NEXT d: PAUSE 300: GO TO 72
 350 CLS : INK 3
 351 IF po<1 THEN PRINT AT 11,8,
"!!POPULATION DEAD!!"
 352 IF a(1)<1 THEN PRINT AT 11,
8," !!NO FOOD LEFT!! "
 353 IF a(2)<1 THEN PRINT AT 11,
8," !!NO WATER LEFT!! "
 354 PAUSE 200: CLS : PRINT : IN
K 4
 355 PRINT "
E GAM
 356 PRINT : INK 2
 357 PRINT "
R OVE
   FOR v=1 TO 16
 358 BEEP .2,v: NEXT v
 359 INK 1: PRINT : PRINT " YO
U LASTED FOR ",mon," MONTHS."
 360 PRINT : PRINT INK 3;TAB 6,"
ANOTHER GAME (Y/N)"
 362 INPUT v$: IF v$<>"n" AND v$
<>"y" THEN GO TO 362
 364 IF v$="n" THEN STOP
 365 IF v$="y" THEN GO TO 54
 900 DATA "Food","Water","Jet fi
ghters","Warships","Tanks","Truc
ks","Cargo ships","Mineral sites
","Oil rigs","Minerals","Oil"
```



A Penny For Your Thoughts

Actually MicroQuest offers you rather more than a penny.

£1 000 to be precise, if you can come up with an idea for an innovative and original use of microelectronics.

MicroQuest is organised jointly by Williams & Glyn's Bank and MAP, the Department of Trade and Industry's programme to encourage the application of microelectronics. The competition aims to encourage young people to take an active part in the development of British industry and business.

WHO CAN ENTER?

MicroQuest is open to everyone between the ages of 16 and 21, and is divided into two categories. The first is a general category allowing entries from anyone between 16 and 21, and the second dealing with those over 16 in secondary education.

We require entrants to MicroQuest, to submit a 2 500 word report, identifying a new use for microelectronics and explaining how it could be implemented.

The applications can be literally for anything from musical instruments to control systems for mining machinery. The idea of the competition is to produce applications that will improve and develop original products or processes. It is important, however, that you keep in mind that the applications must be practical and therefore realistic in terms of cost.

The report itself should give us a clear description of the area where you see the application being made, and what will be the benefits of the application. If you wish to illustrate your report, make sure that all your designs/illustrations are on A4 paper and that there are no more than 6 of them. When you send in your report it should include a summary of about 300 words of its contents.

The prizes for the general category will be a first prize of £1,000, with runners up receiving prizes of £500 and £250. The schools category will have a first prize for the winner's school of £500 of computer equipment of its own choice, plus a cash prize of £150 for the winner. The runners-up will receive £100 and £50.

HOW TO ENTER

Simply tear off and complete the attached entry form and submit it with your report, which should also include a 300 word summary and any designs you have produced. The completed application form should be signed by your employer, teacher or supervisor.

Send the completed form to, "MicroQuest", Williams & Glyn's Bank, 20 Birchin Lane, London EC3

But hurry. Entries for the competition close on the 30th June 1984

MICROQUEST APPLICATION FORM

Complete this form which should be signed by a representative of your employers' company or your training officer or teacher and send it with your report and a 300 word summary, to "MicroQuest", Williams & Glyn's Bank, 20 Birchin Lane London EC3

BLOCK CAPITALS PLEASE

NAME OF APPLICANT

AGE DATE OF BIRTH

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A chip called Sam

***Ray Berry** continues his look at the microprocessor*

The question that is most often asked is: If this microprocessor is so vital and so fantastic, what does it do? The only answer that I can give to that question is 'nothing and everything'. On its own a microprocessor can do nothing at all! It is a kind of extremely fast idiot. It requires instructions in the form of a program. When programmed, it can do almost anything.

First you must remember that the microprocessor does not understand Basic. The only language that it can comprehend is a series of voltages, made up of a high voltage of about five volts, and a low voltage of about zero. As far as the microprocessor is concerned, these two voltages, High and Low, is all that it needs to be programmed, and thus perform its miracles.

These highs and lows have to go into the thing in a sensible order and this order is called machine code. This consists of instructions and information coded into what is called binary, which is made up of ones and zeros, or highs and lows if you prefer. Since these ones and zeros are not so easy for humans to deal with, we have another system called hexadecimal, which is useful because we can then use one hexadecimal number in place of four binary numbers. Don't forget that the microprocessor cannot understand hexadecimal, it is just a kind of human's shorthand and has to be converted to binary by a program called a monitor before the machine can understand a word.

When the manufacturer makes a microprocessor, they publish the commands or instructions set with the chip. These instructions is all that is needed to program it.

Permanent memory

In your home computer, there is a machine code program written by the computer manufacturer which tells the microprocessor how to understand the Basic language. Also in this program is all the information that the microprocessor needs to do all the things that your computer can do.

This internal machine code program is so important — the computer wouldn't work without it — that the manufacturer puts it into unchangeable permanent memory called Rom. This means Read Only Memory and is just that. The microprocessor can read it like a book, but it cannot be changed or erased. If the microprocessor is the heart of the computer, then this Rom is the brain.

When we decide that we want to program the computer, we write out instructions in Basic most of the time. Our instructions go into another kind of memory called Ram. This is Random Access Memory which simply means that, like an exercise book, we can write in it and the computer can read what we have written. In Ram we can also erase the memory or change it if we wish.

So, how does the microprocessor understand our Basic program? Well, the Rom contains something called an interpreter. This acts in the same way as a translator would act if we wanted to talk to someone who couldn't understand English. It translates our program into the highs and lows that the microprocessor can understand.

Highs and lows

Sooner or later, you will start wondering what the microprocessor does with all these highs and lows and to figure that out we have to look at what goes on inside the microprocessor's black box. Inside are a few other little boxes. Some of these are like memory locations and are called registers. There is another little box called the ALU or Arithmetic and Logic unit which has a register associated with it called the accumulator. Another of these registers is called the Program Counter. In addition, there is a register called the Stack Pointer and a register called the Flags register or Status register.

A register is rather like a memory location. It can contain either eight or perhaps sixteen binary digits, or high and lows. Without going into the intricacies of binary, suffice to say that if a register contains eight or sixteen ones and zeroes, then the microprocessor knows and understands that this is a command or a piece of information coded into a binary number that it must do something with. If the microprocessor is given a command in the form of a binary number, it will then fetch the piece of information it has been told to deal with either from memory or from another internal register and it will then act on that piece of information.

The things that a microprocessor can do with data are fairly limited. It can add to it or subtract from it. It can turn data around, change it about and transfer it from one part of memory to another.

Just to round off the insides of our microprocessor, I will mention that the manipulations are done inside the Arithmetic Logic Unit and are let out into the Accumulator when finished, the general purpose registers or locations are used mainly for storage, however temporary, and the program counter is a register which contains a number that is incremented or increased by one each time something happens. This tells the microprocessor where to look in memory for the next instruction.

Lastly, the Flag register is a place where the microprocessor looks to see if anything important has happened. Flags will tell the microprocessor if a number is zero or if there is a carry when two numbers have been added — in some processors the Flag register is where the break command is given to the microprocessor.

Coming out of the black box into the daylight again, we see that the microprocessor has lots of connections looking rather like legs. It is through these connections that the microprocessor can communicate with other chips. In fact, the eight bit processor uses 16 of these connections in order to access the memory. These 16 lines are called the address bus. When the processor puts a number on these lines then the memory location that corresponds to that number is activated. Whatever is in that location is then put onto another bus with eight lines called the data bus and sent back to the microprocessor.

The data bus can also carry a number from the processor to memory, so it is two way. The address bus is only one way.

There are control lines that come from the microprocessor that serve to control other parts of the computer and there is something called the clock. This is not something that you can tell the time by, but a circuit containing a quartz crystal that usually runs at 2Megaherz or two million times a second, providing pulses to the microprocessor by which it can synchronise its actions.

A set of chips

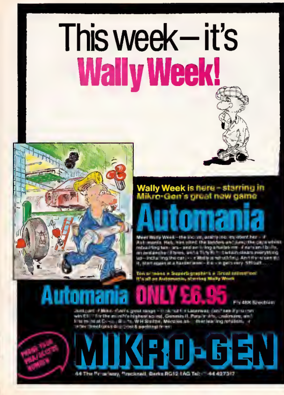
Of course, it takes more than just a microprocessor to make a home computer. We have mentioned the memory, which consists of a set of chips rather smaller than the microprocessor. Other chips also have other important functions.

You may have something called a PIA or peripheral interface adaptor. This chip can deal with several functions such as interfacing or connecting the keyboard to the microprocessor or perhaps form part of a parallel printer output. There is a chip called the VDG or video display generator, which deals with the signals necessary to put your information to a monitor.

Another important chip is called SAM which is short for synchronous address multiplexer. SAM may help in the clock circuit and it may help to provide information for the video display. The most important job that SAM does, though, is to help the microprocessor select the correct Ram chip. The SAM chip is appearing in more and more computers these days and helps to cut out a lot of the circuitry that existed in older machines.

Well there we are. A journey that has taken us into the computer and looked at the microprocessor and, I hope, given you some idea of what goes on inside.





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Reviews

Airborne

Micro Power's *Bandits at 3 O'clock* is a very amusing game of aircraft dog fighting for one or two players. The program loads in two parts (first part instructions, second part game), and is heralded by an Electron version of "Those Magnificent Men in Their Flying Machines" which just about sums up the whole game!

You are then given several options. Apart from deciding if you are flying alone or against a partner, you can decide to fly at night (3 a.m.) or during the day (3 p.m.); you can have clouds or no clouds, flack (random throughout the game) or no flack, choose whether or not to have two cute airships, and finally whether you want their superb use of sound or not.

Having set up the scene for the fight you press the space bar and the warning signal sounds. Press the firing button and you and your opponent are off. First you are seen making a dash from the base building (fantastic use of little men graphics and the sound of pitter patter feet making the mad dash to the aircraft) then, as you make contact, the sound changes again, and last, before the actual fight begins, the sound of your ascent into the clear skies above.

After that, almost anything can happen. To the continuous drone of the aircraft you manoeuvre your plane ready to fire at your opponent.

If that isn't enough the flack which is to be found in the sky, continually changes its position. Fly into it and good-bye to you.

I was immediately taken with this game but I must admit, taken more by the pure fun of it rather than as a game requiring great skill. I enjoyed the way it's been well though out, its choice of options, the best use of the Electron's somewhat limited sound capabilities I've seen yet, and the general zaniness of the whole game.

Fred Short

Program *Bandits at 3 O'Clock* **Price** £6.95 **Micro** Electron **Supplier:** Micro Power, 8/8a Regent Street, Chapel Allerton, Leeds

On board

Wheeler Dealer is quite unusual among games for the Commodore 64 – it resembles a sort of board game testing your business skills and strategy rather than a conventional computer game. Two to 16 players can take part – one person cannot play on their own. At the beginning, each player starts with the same amount of money, which they use to bid first of all for dealerships in car engines, gearboxes or tyres. Having obtained dealerships, players then take it in turns to negotiate and trade with the other players to buy and sell the car parts, the objective being to get sufficient stocks to build complete cars for sale.

The sale of cars happens at the end of each player's turn when he has to take a Town Card (just like a board game). This is randomly selected by the computer and tells the player the size of an order for cars. If he can fulfil the order from his stock he makes the sale, otherwise he loses it.

As you can appreciate from the above description, the game consists entirely of business strategy played out between the participants.

A full set of rules which must be read fully before starting, is provided on a separate leaflet with the cassette. Little guidance is given in the program and more would sometimes have been appreciated.

Business games fans may well enjoy *Wheeler Dealer* with its reliance on business skills and negotiations, but they may eventually tire of it because the mechanics of the game are quite repetitive. It is definitely not a game for the arcade enthusiast.

Richard Corfield

Program *Wheeler Dealer* **Price** £5.50 **Micro** Commodore 64 **Supplier** Mr Chip, 1, Neville Place, Llandudno, Gwynedd, Wales

Black box

For those who like a little intellectual challenge, relying on 'brain' rather than brawn (ie logic as opposed to blasting) how about trying to unravel the structure of the *Molecule*?

Molecule is a variation of the black-box situation where the objective is to try and find out what is within the box by probing it with some sort of ray or beam. The interior of the box normally contains a number of 'obstacles' which interact with the sensing-beam, by reflecting, deflecting or absorbing it, according to a fixed set of rules. By interpreting the paths of the beams correctly it is possible to infer the positions of the 'obstacles'.

In the case of *Molecule* the 'black-box' is a molecule of the antidote to a deadly virus. You have to find the positions of the atoms within the molecule.

In comparison with other versions of the game *Molecule* provides a very clear set of instructions and examples of how the beam interacts with the atoms. Unfortunately however, the need to constantly reposition the cursor from the foot of the screen is an annoyance, particularly if you decide to delete a marker which you have just positioned.

Simon Wilson

Program *Molecule* **Price** £6.90 **Micro** BBC B **Supplier** Bridge Software, 36 Fernwood, Marple Bridge, Stockport, SK6 5BE

Sinking feeling

April 14th 1912. On her maiden voyage in mid Atlantic the Titanic struck an iceberg. She sank within three hours taking with her a vast fortune in gold. Guess what? You have to recover the lost gold (after first finding the ship, of course).

In the first stage of *Titanic* you have to find a sponsor to finance the mission. A mysterious company called R and R Software tend to offer the best terms, since all that they ask for in return is that you agree to buy every game they release for the next ten years. Using the money that you have raised you must buy various supplies including a NASA aerial photograph of the area.

After smashing into several icebergs, you may be lucky enough to find the Titanic itself. You then have to locate and recover the gold as quickly as possible. This is [illegible] form of an adventure game with rooms, doors, passages and the occasional 'monster' to complete the picture.

This game does seem to manage to combine elements of resources management and adventure games into one which does make it quite interesting. However, it does seem to be almost entirely written in Basic, so don't expect any incredible effects.

Simon Lane

Program *Titanic* **Price** £7.95 **Micro** Spectrum **Supplier** R & R Software, 5 Russell Street, Gloucester, GL1 1NE

Cut throat

It had to come, a computer version of the tv series everyone loves to hate. The Electron version of *Dallas* has all the wheeling and dealing of the tv programme, but that is where the similarity ends. Of the characters J R. is still there, but in name only.

Never mind, this is your chance to experience, as nearly as you or I will probably get, the world of high finance, intrigue and cut throat deals that might actually go on out there in Texas.

The program is menu driven and your options are drilling wells, requesting finance, laying pipelines, gaining production facilities or more drilling rigs, and seismic surveying. You start with an outlay of $100m and during the game will receive "telexes" from the computer which frequently spill out messages regarding the state of the industry, and of course, whether J R. is making a bid for your company.

After some initial confusion, I got going. Then, with four wells sunk, limestone from two and a blow out from the third, the telex jumped into action with the news that J R. had bought me out and required my immediate resignation.

In all, an intriguing computer version of a compulsive tv program, although I got a little bit confused by the map and its symbols, due to the small size of the map and the program's use of only blue and white. However, I'm not finished yet J R. If I can raise some funds, you'd better watch out.

Fred Short

Program *Dallas* **Price** £6 95 **Micro** Electron **Supplier** Cases Computer Simulations Ltd, 14 Langton Way, London, SE3 7TL.

Escape

Colditz is a classic text adventure game using split-screen graphics and scrolling text window technique. You are a prisoner of the Germans in Colditz castle and you are trying to escape through the network of tunnels, rooms and chambers.

As text adventure games go, this one is relatively easy to grasp, the tasks are not too complicated and the vocabulary is straightforward. It is speedy too, in that machine code subroutines are used to give fast responses to commands.

There are objects to be found throughout the game to aid your escape, although the use of these, along with all of your actions, must be cautious as the smallest slip may alert the guards. The computer will also respond with biting sarcasm should you goof — such as trying to walk through a doorway without opening the door first.

Simon Lane

Program *Colditz* **Price** £5 95 **Micro** Spectrum **Supplier** Phipps Associates, 172 Kingston Road, Ewell, Surrey, KT19 0SD

Labyrinth

Psi Spy will have you delving into the bowels of the earth, to enter the Labyrinth and then gather gold in great quantities. A snag is that you must also collect the five 'Keys of Zar' in order to get out again.

Psi-Spy starts at the approaches where you have to collect rings (50 points per ring) until you are caught by one of the guards and put into the dungeon where you gain attributes proportional to your score.

In the dungeon you come up against many monsters which you can either fight or bargain with in order to get the food, weapons or gold they guard.

The graphics in both the approaches and the dungeon are a little plain and I found the instructions inadequate. However, on playing, the game proved to be always interesting as there were many challenges to be undertaken and many surprise happenings. *Psi-Spy* manages to combine elements of both arcade and adventure games producing an interesting hybrid.

Simon Lane

Program *Psi-Spy* **Price** £7 95 **Micro** Spectrum **Supplier** Postern, PO Box 2, Andoversford, Cheltenham, Gloucs

Graphic

The *Graphs* package of programs took me back to the hazy days of Maths A Level and hours of making grubby marks on fine green lined graph paper.

It is a suite of five programs written by D. Williams, a Senior Lecturer in Maths, for use by students studying O and A Level GCE or any similar advanced Maths course.

Programs 1 and 2 are for curve plotting. The first program allows you to plot any curve in terms of X (including trigonometric functions and curves with asymptotes), the second allows you to plot any parametric curve in terms of t for X and Y.

The next three programs are in the form of multiple choice tests presenting a graph and a choice of four possible equations — one of which represents the graph shown. The questions are chosen at random, but increase in difficulty as the test progresses. A score is kept — evidence of success or failure for you or some nosy teacher. These tests cover, in turn, variations on sine, cosine and tangent curves, straight line graphs, and quadratic and cubic curves.

The first two programs have a 'quick plot' facility which automatically scales the graph. It is also possible to choose the range yourself or alter the range once it is plotted.

The instruction booklet is very easy to follow and even suggests some experiments to try — which I found very useful.

Maybe it's the Puritan in me but I'm troubled by this package. To understand the relationship between abstract equations and graphs it is necessary to laboriously work out a whole range of results and plot them by hand onto paper. This sort of tedious chore is ideal for computerisation — by niggling doubt is whether automating the process negates its educational value.

Sometimes the only way to learn is by sheer hard graft!

Jan Watterson

Program *Graphs* **Price** £9·95 **Micro** BBC/Electron **Supplier** Salamander, 17 Norfolk Rd, Brighton, Sussex

Line drawing

***John de Rivaz** shows how to add graphics to adventures written with The Quill*

The Quill is a system for writing adventure games in machine code on the Sinclair Spectrum. It has been well described in reviews and advertisements in *Popular Computing Weekly* at the time of writing. However, it provides no means of drawing pictures, and adventure games without pictures are not well received these days.

By printing lines of graphics, however, pictures can be built up. This program generates some additional graphics from which line drawings can be built on either commercial adventures or your own.

Check that the version of *The Quill* you have stores its special graphics at 26931, and in the unlikely event it doesn't alter lines 920 and 940 appropriately. (See *The Quill* manual.)

Put an empty tape in the machine and run the program. When you get the *"press any key"* message save the code generated by the program. Then load *The Quill* and load the code you have just saved on your tape using the *"Load Database"* function. You will now have the special graphics in your machine. They will save when you save an adventure or a database.

```
  90  REM   14 January 1984
This  program  creates  graphics
for adding pictures to adventure
games written with "The Quill".
  91:
 100 PRINT "Data for special gra
phics for   adventure games"
 110  DATA 0,0,0,0,1,6,8,8
 120 DATA 0,0,0,0,192,48,8,8
 130 DATA 8,8,8,6,1,0,0,0
 140 DATA 8,8,8,48,192,0,0,0
 150 DATA 0,0,0,0,15,8,8,8
 160 DATA 0,0,0,0,248,8,8,8
 170 DATA 8,8,8,8,15,0,0,0
 180 DATA 8,8,8,8,248,0,0,0
 190 DATA 8,8,8,8,255,0,0,0
 200 DATA 8,8,8,8,15,8,8,8
 210 DATA 8,8,8,8,248,8,8,8
 220 DATA 0,0,0,0,255,8,8,8
 230 DATA 129,66,36,24,0,0,0,0
 240 DATA 0,0,0,0,24,36,66,129
 250 DATA 129,66,36,24,24,36,66,
129
 260 DATA 1,2,4,8,16,32,64,128
 270 DATA 128,64,32,16,8,4,2,1
 380 DATA 8,8,8,8,255,8,8,8
 390 DATA 8,8,8,8,8,8,8,8
 400 DATA 0,0,0,0,255,0,0,0
 410 DATA 85,170,85,170,85,170,8
5,170
 890 DATA 256
 900  FOR f=USR "a" TO USR "u"+7
: READ a: IF a=256 THEN  GO TO 1
000
 910 POKE f,a: NEXT f
 919 RESTORE
 920 FOR f=26931 TO 27098
 930 READ a: POKE f,a: NEXT f
 940 FOR f=1 TO 3: SAVE "G"CODE
26931,27098-26931: NEXT f
 950 REM
The Porthtowan Combo Tape  issue
3  contains 4 graphic  adventure
games using this system.   Price
£4 from:
RTL, Nestowan, Porthtowan, Truro
TR4 8AX, Cornwall, UK.
 960:
1000  FOR f=144 TO 164: PRINT CH
R$ (f-79),CHR$ f: NEXT f
```


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Space to move

Joseph Burr and A Pudding show how to determine planetery movement in a perfect universe

This program demonstrates the effects of planets on each other in a perfect two-dimensional universe. It uses the following equations of motion and gravity:

F=(G*M*m)/(D*D)
A=F/M
S=(U*T)+(A*T*T)/2

F Force between two bodies G Gravitational constant M Mass of body which is under consideration m Mass of each other body considered in turn D Distance separating the two bodies A Acceleration of body under consideration S Distance gone in one unit of time U Initial velocity of body under consideration T Initial velocity of body under consideration T Length of one time unit.

When you Run the program, it asks for the number of objects that you intend to have. Next, you are asked for unit time. If you give this a very small value (say 0.01) the trace will be very accurate, but very slow. Larger values produce a far more immediate effect, but the errors are very much greater. The best method is to set up the program and leave it to run for some time.

It is best to select large values for G (universal constant of gravitation – its real value is about 6.67E–11 Newtons/square metre). We suggest you start at a value of about 50 and work down from there.

The scaler allows you to make the screen any size you want. It normally covers an area of about two hundred and fifty by two hundred distance units (256*192 to be exact). The scaler can be used to multiply these distances by any value you want. If you do not want to use a scaler, put in a value of one when prompted.

For each object, the program asks you for five pieces of information: position, mass and velocity. Position and velocity are put in by co-ordinates. The program allows you to put in values that are off the screen (it does not show them unless they are on it).

The program resolves forces separately along *X* and *Y* axes. This is why the formulae appear twice.

```
10 REM 2D DETERMINATION OF PLANET
20 REM MOVEMENT IN A PERFECT
30 REM UNIVERSE...
40 REM BY J.BURR & A.PUDDING
50 REM GRAVITRON
60 INPUT"NUMBER OF OBJECTS ";O
70 DIMX(O,3):DIMY(O,3):DIMM(O):DIMXN(O,3):DIMYN(O,3)
80 INPUT"UNIT TIME ";T:INPUT"G ";G:INPUT"SCALER ";S
90 FORX=1TOO:PRINT"OBJECT £";X
100 INPUT"MASS ";M(X)
110 INPUT"X-POS";X(X,1):INPUT"Y-POS";Y(X,1):INPUT"X-VEL";X(X,2):
INPUT"Y-VEL";Y(),2)
120 NEXT
130 PMODE 4,1:PCLS:SCREEN1,1
140 REM ***WORK OUT POSITIONS***
150 FORA=1TOO
160 FORB=1TOO
170 IF A=B THENGOTO280
180 X=X(A,1)-X(B,1):Y=Y(A,1)-Y(B,1):Z=(X*X)+(Y*Y)
190 IF X>OTHENLETXM=-1:ELSEXM=1
200 IF Y>0THENLETYM=-1:ELSEYM=1
210 F=G*M(A)*M(B)/Z
220 FX=ABS(F*X/(X+Y)):FY=ABS(F*Y/(X+Y))
230 FX=FX*XM:FY=FY*YM
240 AX=FX/M(A):AY=FY/M(A)
250 DX=X(A,2)*T+AX*T*T/2:DY=Y(A,2)*T+AY*T*T/2
260 XN(A,1)=X(A,1)+DX:YN(A,1)=Y(A,1)+DY
270 XN(A,2)=X(A,2)+AX*T:YN(A,2)=Y(A,2)+AY*T
280 NEXT
290 NEXT
300 REM ***PLOT POSITIONS***
310 FORA=1TOO
320 IFX(A,1)<0ORX(A,1)>256*S THEN370
330 IFY(A,1)<0ORY(A,1)>192*S THEN370
340 IFXN(A,1)<0ORXN(A,1)>256*S THEN370
350 IFYN(A,1)<0ORYN(A,1)>192*S THEN370
360 LINE(X(A,1)/S,Y(A,1)/S)-(XN(A,1)/S,YN(A,1)/S),PSET
370 NEXT
380 REM***RESET VALUES***
390 FORA=1TOO:FORB=1TO3
400 X(A,B)=XN(A,B):Y(A,B)=YN(A,B)
410 NEXT:NEXT
420 GOTO140
```


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Total
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Key to the QL — part 2

***John Cochrane** continues his look at the SuperBasic Rom*

This week I'll continue the list of keywords available.

LOAD — Loads a program from microdrive
LOCal — Specifies a set of variables to for used within a *Define Procedure* or *Function* which are separate from any globally based variables.
LOG10 (*n*) — Log to base 10
LRUN — Load and run a program from Microdrive.
MERGE — Merge a program from Microdrive.
MISTake — Another intrigue with no answer from me.
MOD (*n*) — Modulus?
MODE *n* — Modulus?
MODE *n* — Sets display mode to high or low resolution *n*=256 for low resolution *n*=512 for high resolution.
MOVE *n* — Turtle graphics. Move forward *n* units
MRUN — Merge and run?
NET *n* — Used to define source/destination when using Sinclair Net?
NEW — Clears program from memory
NEXT — Used as loop limit in a *For* construct, can be followed by additional statements and an *End For* for a more complex structure than is available with usual Basics
OPEN #*n* — Attaches a device to Channel *n*.
OPEN_IN — To input data as a pseudo-random file from Microdrive.
OPEN_NEW — Sets up a pseudo-random (or possibly true-random?) file on a Microdrive cartridge for the first-time storage of data. Subsequent data saves use Open
OVER *n* — Not the same as Spectrum over
PAN *n* — Moves screen *n* pixels to the right.
PAPER *n* — Sets background colour
PAUSE *n* — Waits *n* times twenty milliseconds.
PEEK *n* — Value of byte at memory location *n*
PEEK_L *n* — Data for long-word (4 bytes)
PEEK_W *n* — Ditto for word (2 bytes)
PENDOWN — Turtle graphics. Commences drawing sequence as turtle moves.
PENUP — Turtle graphics. Halts drawing sequence as turtle moves.
PI — 3 142
POINT *x,y* — Plots a pixel at co-ordinates *x,y*
POINT_R — A relative co-ordinate version of *Point*?
POKE *n,m* — Sets byte at memory location *n* to *m*
POKE_L — Ditto for long-word (4 bytes)
POKE_W — Ditto for word (2 bytes)
PRINT — Send character data to screen or other specified channel
RAD — Degrees to radians conversion?
RAND — Not implemented but made as word in Rom.
RANDOMISE — Sets seed for random random function.
READ — Should read data from *Data* statements but instead gives "not implemented" message
RECOL — I don't know what this is but I see Andy Pennell said something about colour palettes
REMAINDER — Catch all at end of *Select* structure.
REMark — Starts a comment line
RENUM *n m* — Renumbers the program from the first line to than from *n* and increment in steps of *m* Default 100 10
REPeat — Starts a general program loop terminated by *End Repeat*, jumped out of by *Exit*.
RESTORE *n* — Sets line for the reading of data from *Data* statements (See *Read*)
RETRY — Don't know
RETurn — Jumps out of *Procedure* or *Function*.
RND (*n,m*) — Gives random random (0-1) if no parameters or random integer between *n* and *m*.
RUN *n* — Runs program from line *n*.
SAVE — Save program to Microdrive
SBYTES — Save machine-code to Microdrive
SCALE *n* — Sets scaling factor for plot commands
SCROLL *n* — Moves contents of window up by *n* pixels. Can define whole or part of a window for scrolling
SELect — Structure for multiple-choice programming.
SIN(*n*) — Trig
ASIN(*a*) — Trig
SQRT (*n*) — Square root of *n*
STEP — Defines step interval in *For* range
STOP — Terminates program execution
STRIP — The provisional manual indicates that a stripe effect is available (fine matrix of contrasting colours) but I dnt not test this out.
TAN (*a*) — Trig.
ATAN(*n*) — Trig.
THEN — Used with *If*. The provisional manual implied that this word not always be used but I never found an occasion when it was not required
TURN *a* — Turtle graphics. Turn clockwise through angle *a*.
TURNTO *a* — Turtle graphics. Turn to absolute angle *a*
UNDER *n* — If set to one then display all printed text with underline until reset to 0
VERS — ?
WHEN — Still to for implemented
WIDTH — ?
WINDOW — Defines size and position of a screen-display window
XOR — Logical exclusive Or

I am very glad to see Renum but would like to see it extended to allow blocks of program lines to be copied or moved from place to place as well. It is possible to use *Dline* with *Renum* and Microdrive *Saves* to move blocks of program around but this is a little long-winded. The *Trace* command mentioned in the provisional manual has not been implemented (along with *Step*) which is a great pity, especially as the programs which I write tend to attract bugs like nobody's business. Turtle graphics are a bit of fun, it will be interesting to see if Sinclair provides the hardware add-ons to drive real turtles.

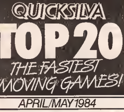
There are one or two bugs present in the machine, which unfortunately make it very difficult to do much more so far than play around with SuperBasic. For example, using the string-slicing features so beloved of previous Sinclair Basics can lead to program crashes, as can trying to enter a program of more than about 300 lines, as can trying to list a line of more than about 90 characters, as can letting the infuriating automatic-listing-on-line-edit run to the end of a listing! The *Alt* key is supposed to switch between an insert and a replace mode during line editing but does not. There seems to be some obscure interaction between some operations which can cause problems, for example I had problems with *On n=Remainder* and *Print* when used together.

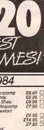
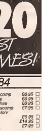
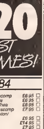
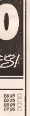
Without a reliable manual it is difficult to be sure that any problems that come up are not the misuse of perfectly good functions. Some things are obvious, others are not. Along with the keywords given above I also listed the error messages ("not implemented" is a bit of a give away) and a list of days of the week and months of the year. Typing *Print* DAY$(3) gives a print-out of "wed". Typing *Print* MONTH$(4) gives an immediate crash.

The QL is not a spectacularly fast machine, at least not as fast as I had been hoping. It compares favourably with the Apricot (as an example of a contemporary 16-bit microcomputer) when running calculations but the display is slow — very comparable to the Spectrum. This is no doubt partly due to the windowing and scaling facilities but is a bit of a let down. I am told that Sinclair Research are trying to speed things up but by how much I do not know. Also, the Microdrives got slower and slower as the program size increased. They work through some form of buffer, which makes some operations very fast — much faster then floppy disc operations — but I suspect that the buffer size is not correctly set which leads to additional delays as either data is read into and out of memory or the buffer is expanded.

This brings me to a rather important observation. I was expecting so much from the QL that I was inevitably disappointed with the machine when I at last got my hands on one. This was not rational and it is only now that I have had time to sit back and think about it that I appreciate the value that is offered by the beast.

To pull my thoughts together. The lack of programming speed and the number of bugs still remaining is disappointing, but the facilities offered by the SuperBasic language are comprehensive.



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Dragon

Upper and lower

Roger Walton *presents a full character set for use in* Pmode 4

The Dragon 32 has no provision for printing text onto the high-resolution graphics screens. In addition, the text screen does not allow true lower-case characters to be printed. This is especially unfortunate in programs to be used by young children who find upper-case difficult to read.

Many programs use the excellent *Draw* command to overcome these difficulties, but this can be slow and tedious. The aim of the present program is to provibe a full character set, written in machine code, which may be used in *Pmode 4*.

The idea for the program came from Peter Chase's article "A Question of character" which was published in an earlier edition of *PCW*. A number of changes have been made to the original program.

Listing 1 gives the full program in Basic, including the machine-code routine, a character set, and an example of the use of the program.

Inspection of the character set data will show that a full range of characters from *Chr$(32)* to *Chr$(122)* have been defined. Each character is built up on a grid which is eight pixels wide and 12 pixels deep. This makes the lower-case characters particularly clear. Each number in this data represents one byte of screen memory. Conversion of each number to binary will reveal whether an individual pixel is on or off.

The program is easy to use. The print routine is called using the Basic *Usro* command together with *Varptr* (see line 1500). It is necessary to define the *Usro* address (see line 1330) before the routine is called. The screen is 32 characters across and 16 lines down and the actual printing positions should be *Poked* into addresses *&H7802* and *&H7803* before calling the routine (see line 1470).

The whole program may be saved using *Csave* or using *Csaven "Progrm", &H7000, &H7857, &H858*.

With care, it would be possible to select only the data lines of the characters required in a particular program. If you do this make sure that the data values are *Poked* into the correct addresses. (Remember that *Chr$(0)* is from *&H7000* to *&H700B* etc). It would also be a simple matter to define other characters and save them as *Chr$(128)* to *Chr$(255)*.

Listing 2 gives the assembler code for the actual printing routine. This should make it easy for those readers with assemblers to see how the routine works.

```
10 '********LISTING 1**********
20 '******************************
30 '*                            *
40 '*  Character set for         *
50 '*  DRAGON PMODE 4            *
60 '*  Roger Walton Feb. 1984    *
70 '*                            *
80 '******************************
90 CLEAR 1000,&H6FFF
100 FOR I=&H7800 TO &H7856
110 READ N$:N$="&H"+N$
120 N=VAL(N$)
130 POKE I,N
140 T=T+N
150 NEXT I
160 IF T<>7246 THEN CLS:PRINT
    "DATA ERROR":STOP
170 'MACHINE-CODE DATA
180 DATA 20,02,12,12,1F,21,FC,78
190 DATA 02,C1,10,25,03,5A,20,F9
200 DATA 34,06,A6,80,81,0D,26,03
210 DATA 35,06,39,C6,0C,3D,C3,70
220 DATA 00,1F,02,35,06,BD,78,36
230 DATA 4C,81,20,25,E3,4F,5C,C1
240 DATA 10,25,DD,5A,20,DA,34,36
250 DATA 8E,06,00,30,86,C1,00,27
260 DATA 07,30,89,01,80,5A,26,F9
270 DATA C6,0C,A6,A0,A7,84,30,88
280 DATA 20,5A,26,F6,35,36,39
290 '***************************
300 'POKE IN THE CHARACTER SET
310 'EACH CHARACTER IS REPRESENTED
    BY 12 UNITS OF DATA
320 FOR I=&H7180 TO &H75C3
330 READ N
340 POKE I,N
350 NEXT
360 '****DATA FOR LETTERS******
370 'CHARS FROM 32 TO 122
380 '
390 DATA 0,0,0,0,0,0,0,0,0,0,0,0
400 DATA 8,8,8,8,8,0,8,0,0,0,0,0
410 DATA 40,40,40,0,0,0,0,0,0,0,0,0
420 DATA 0,20,62,20,62,20,0,0,0,0,0,0
430 DATA 16,56,68,56,60,56,16,16,0,0,0,0
440 DATA 0,34,36,8,16,36,68,0,0,0,0,0
450 DATA 0,24,36,24,38,34,26,0,0,0,0,0
460 DATA 0,48,16,16,0,0,0,0,0,0,0,0
470 DATA 16,32,64,64,64,32,16,0,0,0,0,0
480 DATA 8,4,2,2,2,4,8,0,0,0,0,0
490 DATA 8,42,28,8,28,42,8,0,0,0,0,0
500 DATA 0,8,8,62,8,8,0,0,0,0,0,0
510 DATA 0,0,0,0,8,8,16,0,0,0,0,0
520 DATA 0,0,0,62,0,0,0,0,0,0,0,0
530 DATA 0,0,0,0,0,24,24,0,0,0,0,0
540 DATA 0,2,4,8,16,32,64,0,0,0,0,0
550 DATA 28,34,38,42,50,34,28,0,0,0,0,0
560 DATA 8,24,8,8,8,8,28,0,0,0,0,0
570 DATA 56,68,4,24,32,64,124,0,0,0,0,0
580 DATA 28,34,2,12,2,34,28,0,0,0,0,0
590 DATA 4,12,20,36,62,4,4,0,0,0,0,0
600 DATA 62,32,60,2,2,34,28,0,0,0,0,0
610 DATA 14,16,32,60,34,34,28,0,0,0,0,0
620 DATA 62,2,4,8,16,32,32,0,0,0,0,0
630 DATA 28,34,34,28,34,34,28,0,0,0,0,0
640 DATA 28,34,34,30,2,4,56,0,0,0,0,0
650 DATA 0,0,8,0,0,8,0,0,0,0,0,0
660 DATA 0,0,8,0,8,8,16,0,0,0,0,0
670 DATA 2,4,8,16,8,4,2,0,0,0,0,0
680 DATA 0,0,62,0,62,0,0,0,0,0,0,0
690 DATA 32,16,8,4,8,16,32,0,0,0,0,0
700 DATA 28,34,4,8,8,0,8,0,0,0,0,0
710 DATA 0,60,66,90,38,38,26,0,0,0,0,0
720 DATA 28,34,34,62,34,34,34,0,0,0,0,0
730 DATA 60,34,34,60,34,34,60,0,0,0,0,0
740 DATA 28,34,32,32,32,34,28,0,0,0,0,0
750 DATA 112,72,68,68,68,72,112,0,0,0,0,0
760 DATA 124,64,64,120,64,64,124,0,0,0,0,0
770 DATA 124,64,64,120,64,64,64,0,0,0,0,0
780 DATA 30,32,32,32,38,34,30,0,0,0,0,0
790 DATA 34,34,34,62,34,34,34,0,0,0,0,0
800 DATA 28,8,8,8,8,8,28,0,0,0,0,0
810 DATA 2,2,2,2,2,34,28,0,0,0,0,0
820 DATA 34,36,40,48,40,36,34,0,0,0,0,0
830 DATA 32,32,32,32,32,32,60,0,0,0,0,0
840 DATA 34,54,42,42,34,34,34,0,0,0,0,0
850 DATA 34,34,50,42,38,34,34,0,0,0,0,0
860 DATA 28,34,34,34,34,34,28,0,0,0,0,0
870 DATA 60,34,34,60,32,32,32,0,0,0,0,0
880 DATA 28,34,34,34,42,36,26,0,0,0,0,0
890 DATA 60,34,34,60,40,36,34,0,0,0,0,0
900 DATA 28,34,32,28,2,34,28,0,0,0,0,0
```

```
910 DATA 62,8,8,8,8,8,8,0,0,0,0,0
920 DATA 34,34,34,34,34,34,28,0,0,0,0,0
930 DATA 34,34,34,20,20,8,8,0,0,0,0,0
940 DATA 34,34,34,42,42,54,34,0,0,0,0,0
950 DATA 34,34,20,8,20,34,34,0,0,0,0,0
960 DATA 34,34,20,8,8,8,8,0,0,0,0,0
970 DATA 62,2,4,8,16,32,62,0,0,0,0,0
980 DATA 126,96,96,96,96,96,126,0,0,0,0,0
990 DATA 0,64,32,16,8,4,2,0,0,0,0,0
1000 DATA 62,6,6,6,6,6,62,0,0,0,0,0
1010 DATA 8,28,42,8,8,8,8,0,0,0,0,0
1020 DATA 0,16,32,126,32,16,0,0,0,0,0,0
1030 DATA 16,16,16,16,68,56,16,0,0,0,0,0
1040 DATA 0,0,24,36,36,36,26,0,0,0,0,0
1050 DATA 32,32,56,36,36,36,56,0,0,0,0,0
1060 DATA 0,0,24,36,32,36,24,0,0,0,0,0
1070 DATA 4,4,28,36,36,36,28,0,0,0,0,0
1080 DATA 0,0,24,36,56,36,24,0,0,0,0,0
1090 DATA 24,36,32,56,32,32,32,0,0,0,0,0
1100 DATA 0,0,24,36,36,36,28,4,4,36,24,0
1110 DATA 32,32,32,56,36,36,36,0,0,0,0,0
1120 DATA 0,16,0,16,16,16,16,0,0,0,0,0
1130 DATA 0,4,0,4,4,4,4,4,4,36,24,0
1140 DATA 32,32,36,40,48,40,36,0,0,0,0,0
1150 DATA 32,32,32,32,32,32,32,0,0,0,0,0
1160 DATA 0,0,54,73,73,73,73,0,0,0,0,0
1170 DATA 0,0,24,36,36,36,36,0,0,0,0,0
1180 DATA 0,0,24,36,36,36,24,0,0,0,0,0
1190 DATA 0,0,24,36,36,36,56,32,32,32,32,0
1200 DATA 0,0,24,36,36,36,28,4,4,6,4,0
1210 DATA 0,0,24,36,32,32,32,0,0,0,0,0
1220 DATA 0,0,24,36,24,36,24,0,0,0,0,0
1230 DATA 32,32,56,32,32,36,24,0,0,0,0,0
1240 DATA 0,0,36,36,36,36,26,0,0,0,0,0
1250 DATA 0,0,36,36,36,36,24,0,0,0,0,0
1260 DATA 0,0,73,73,73,73,54,0,0,0,0,0
1270 DATA 0,0,36,36,24,36,36,0,0,0,0,0
1280 DATA 0,0,36,36,36,36,28,4,4,36,24,0
1290 DATA 0,0,60,4,8,16,60,0,0,0,0,0
1300 '***************************
1310 'DEMO ROUTINE
1320 PMODE 4:PCLS: SCREEN 1,0
1330 DEFUSR0=&H7800
1340 'X,Y POSITIONS FOR PRINTING
     (X:0TO31,Y:0TO15)
1350 X=4:Y=0
1360 PR$="The full character set."
1370 GOSUB 1460
1380 X=2:Y=2
1390 FOR I=32 TO 122
1400 PR$=CHR$(I)
1410 X=X+2
1420 IF X>=30 THEN X=2:Y=Y+2
1430 GOSUB 1460
1440 NEXT
1450 GOTO 1450
1460 'DISPLAY CHARACTERS
1470 POKE &H7802,X:POKE &H7803,Y
1480 'CHR$(13) USED TO INDICATE
     END OF STRING.
1490 P$=PR$+CHR$(13)
1500 N=USR0(VARPTR(P$))
1510 RETURN
```

```
7000            30        PRT #0C
7000            40 *****LISTING 2**************
7000            50 * PROGRAM BASED ON ORIGINAL *
7000            60 * BY PETER CHASE PUB  PCW   *
7000            70 ****************************
7800            80        ORG $7800
7800 2002       90        BRA $IN
7000           100 @CHARSET EQU $7000
7802           110 @COORD RMB 2
7804           120 $IN EQU *
7804 1F21      130        TFR Y,X
7806 FC7802    140        LDD @COORD PRINTING
                          POSITION
7809 C110      150 @CHECK CMPB #16 SCREEN 16
                          LINES DOWN
780B 2503      160        BLO @RDCHAR
780D 5A        170        DECB
780E 20F9      180        BRA @CHECK
7810 3406      190 @RDCHAR PSHS D
7812 A680      200        LDA ,X+
7814 810D      210        CMPA #13 LOOK FOR CR,
                          END OF STRING
7816 2603      220        BNE @GOON
7818 3506      230        PULS D
781A 39        240        RTS
781B C60C      250 @GOON LDB #12
781D 3D        260        MUL
781E C37000    270        ADDD #@CHARSET
7821 1F02      280        TFR D,Y
7823 3506      290        PULS D
7825           300 *INDEX FOR CHAR NOW IN Y
7825 BD7836    310        JSR @PRINTC
7828 4C        320        INCA NEXT PRINT POSITION
7829 8120      330        CMPA #32 END OF LINE
782B 25E3      340        BLO @RDCHAR
782D 4F        350        CLRA BACK TO START OF LINE
782E 5C        360        INCB NEXT LINE DOWN
782F C110      370        CMPB #16
7831 25DD      380        BLO @RDCHAR
7833 5A        390        DECB
7834 20DA      400        BRA @RDCHAR
7836 3436      410 @PRINTC PSHS D,X,Y
7838 8E0600    420        LDX #1536 HIRES SCREEN
                          START
783B 3086      430        LEAX A,X
783D           440 *A-REG CONTAINS ACROSS PRINT
                          POS.
783D C100      450        CMPB #0
783F 2707      460        BEQ @SHOW
7841 30890180  470 @ADDLINE LEAX 384,X
7845 5A        480        DECB
7846           490 *B-REG CONTAINS DOWN PRINT POS.
7846 26F9      500        BNE @ADDLINE
7848 C60C      510 @SHOW LDB #12
784A A6A0      520 @PRIN LDA ,Y+
784C A784      530        STA ,X
784E 308820    540        LEAX 32,X
7851 5A        550        DECB
7852 26F6      560        BNE @PRIN
7854           570 *EACH CHAR IS 12 LINES DOWN
7854 3536      580        PULS D,X,Y
7856 39        590        RTS
7857           600        END
```



FOR SPECTRUM 48K



CONQUEST A tactical game which even veteran players will find both challenging and rewarding

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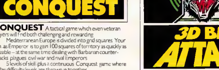
4 levels of skill. At each level the game gets faster and more complicated and the vampires more dangerous.

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FOR SPECTRUM 48K

3D BAT ATTACK



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Easy machine code

***Adrian Warman's** program takes the aches and pains out of machine code programming*

As any machine code programmer can testify, one of the most tedious tasks in the process of creating a machine code program is the calculation of the numbers which are then *Poked* into memory to form the program. These numbers are typically stored in Data statements within a Basic loader program, within the main program itself. Given a machine code program in memory, the task of copying out all the codes and putting them onto the Data statements is slow, odring and error prone.

This simple Basic program, written for the standard Commodore 64, performs the entire task in a simple, painless fashion. An interesting aspect of the program is that it is 'self modifying' — that is, the program you are left with after the Run is complete is not the program you started with. Such a feature is fairly common on low level machine-code programs, but not so common in medium level languages such as Basic.

In order to make the program as useful as possible, several parameters must be included before running the program. Let us assume: 1) The Data statements are to start with line number 5000. 2) The increment between each of the Data statements is to be 5. 3) The machine code data starts at location 828 (the beginning of the cassette buffer). 4) The machine code data has the last byte at location 90.

In order to operate, the program must have 8 consecutive bytes of memory. We will assume that these start from location 49152.

This information is set up in the program by altering lines 120 to 160, so that they would read as follows (assuming the above examples hold true)

```
120 Lne = 5000
  130 Inc = 5
  140 Beg = 828
  150 Fin = 900
  160 Kee = 49152
```

Then simply run the program. Various lines will begin to appear on the screen as the data statements are created, but the job is not completed until the screen clears and the message Job Done appears. If you then list the program, you will find that some Data statements have appeared, with the requested data, and with the specified line numbers. These can now be used as desired — perhaps *Merged* into another program using one of the well publicised routines. Note that the first item of the first Data statement is that of the beginning address as chosen in line 140, but that the last number of the last Data statement is not necessarily that of the end location as given in line 150. This is because each line always has 16 numbers in it to keep it symmetrical. The last number of the location will appear within these 16 Data numbers.

The Commodore computers have a very useful 10 character key buffer. By putting some fake values into this buffer, we can 'fool' the computer into thinking that some keys were pressed, when in reality the keyboard was not touched!

Owing to the marvellous characteristics of the Commodore editing system, if <*Return*> is pressed while the cursor is on any screen line, and in direct, the characters of that line are read into an 80 character buffer, and treated as an instruction.

This program works by printing a fake Data line onto a known point on the screen followed by a *Goto* instruction. Then certain characters are placed in the keyboard buffer and the program stopped. Once the program has stopped, the computer deals with these keyboard buffer characters, which enter the Data line as a Basic statement, and then perform the *Goto* back into the program.

Note that because additions are being made to the program (even though under program control) this is treated as program modification, which causes erasure of variables.

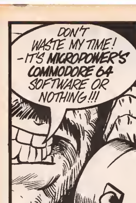
Accordingly, variables must be stored in memory.

Program notes

With the above points in mind, it should be possible to follow the program listing and understand what is happening.

- 120-160 The parameters for loading the data, as described above.
- 180-200 Print the start of the first fake line onto the screen. As each line is started, the screen is cleared so the first line always starts on the first screen line. The line number is printed and the Data statement.
- 210-240 Proceed to list out the next 16 bytes of data using a constant format of 3 spaces for the number followed by a comma (except the last number of the line).
- 250 When the program restarts after accepting the fake data line, it must know where to go to. This line prints a suitable *Goto* instruction.
- 270-360 As pointed out above, all variables are lost when each line is entered. These lines store the variables for access later.
- 380-410 These lines tailor the keys in the keyboard buffer. Location 198 contains the number of keys in the buffer, in this case, set to three: Home and two *Cr* or <*Return*>s.
- 430 Halts the program. The computer then acts on the contents of the keyboard buffer. This causes entry of the fake Data line, then a restart by the *Goto 450*.
- 450-490 First thing to do when the program restarts is to reload the variables.
- 510-530 Update the variables. The next Data line number is calculated (line 510), and the next byte location found (line 520). Finally, a check is made to see if the job has been finished; if not, the whole process starts again.
- 550-590 Clear out the keyboard buffer, then clear the screen and print Job Done.

```
100 REM DATA CREATOR.
110 :
120 LNE=10000
130 INC=10
140 BEG=49152
150 FIN=49162
160 KEE=700
170 :
180 PRINT CHR$(147);
190 PRINT MID$(STR$(LNE),2);
200 PRINT " DATA ";
210 FOR LOC=BEG TO BEG+14
220 PRINT RIGHT$("  "+STR$(PEEK(LOC)),3);",";
230 NEXT LOC
240 PRINT RIGHT$("  "+STR$(PEEK(BEG+15)),3)
250 PRINT "GOTO 450"
260 :
270 POKE KEEP,LNE-INT(LNE/256)*256
280 POKE KEEP+1,INT(LNE/256)
290 POKE KEEP+2,INC-INT(INC/256)*256
300 POKE KEEP+3,INT(INC/256)
310 POKE KEEP+4,BEG-INT(BEG/256)*256
320 POKE KEEP+5,INT(BEG/256)
330 POKE KEEP+6,FIN-INT(FIN/256)*256
340 POKE KEEP+7,INT(FIN/256)
350 POKE 251,KEE-INT(KEE/256)*256
360 POKE 252,INT(KEE/256)
370 :
380 POKE 198,3
390 POKE 631,19
400 POKE 632,13
410 POKE 633,13
420 :
430 STOP
440 :
450 KEE=PEEK(252)*256+PEEK(251)
460 LNE=PEEK(KEE+1)*256+PEEK(KEE)
470 INC=PEEK(KEE+3)*256+PEEK(KEE+2)
480 BEG=PEEK(KEE+5)*256+PEEK(KEE+4)
490 FIN=PEEK(KEE+7)*256+PEEK(KEE+6)
500 :
510 LNE=LNE+INC
520 BEG=BEG+16
530 IF BEG<=FIN THEN GOTO 1060
540 :
550 POKE 198,0
560 PRINT CHR$(147)
570 PRINT "JOB DONE."
580 :
590 :   READY.
```


DON'T WASTE MY TIME! - IT'S MICROPOWER'S COMMODORE 64 SOFTWARE OR NOTHING!!!

Open Forum

Open Forum is for you to publish your programs and ideas. Take care that the listings you send in are all bug-free. Your documentation should start with a general description of the program and what it does and then give some detail of how the program is constructed. We will pay the *Program of the Week* double our new fee of £6 for each program published.

Gone Fishing

on Spectrum

Gone Fishing is an original game for the 48K Spectrum in which you have to catch fish using the latest electronic rod, line and hook.

To make the strike you must hit the fish directly on the nose. If you hit the body or tail then you lose a life and have to start again.

To make the game a little more difficult there are electric eels that kill you if you touch any part of their body!

Points are scored for each fish caught, the points increasing with each level and with the speed with which the strike is made. The number of eels increases with each of the seven levels of the game.

If you get the highest score then you can enter your name in the Hall of Fame. You start the game with 5 lives.

Program notes

1–3	Machine code screen mover
60–110	Initialise variables
120–350	Set hook position and draw screen
5000–5200	Set up user defined graphics
6000–6200	Print introduction to game
7000–7110	Play theme tune
8000–8340	Draw fisherman and sea
8360–8800	Move title then clear screen
9000–9100	Main playing loop
8660–9080	Check for hit or miss
9200–9250	Miss routine
9300–9370	Hit routine
9360–9450	If all fish caught go to next level
9500–9600	Hall of fame routine

```
   1 REM GONE FISHING © A.WILTSHIRE
   2 FOR f=1 TO 28: READ a: POKE 23759+f,a: NEXT f
   3 DATA 6,128,17,0,72,213,228,30,197,1,31,0,26,237,176,43,118,0,35,35,19,193,16,240,201
  10 GO SUB 5000
  20 GO SUB 6000
  30 GO SUB 8000
  60 LET High=100065
  70 LET N$="RON"
  80 POKE 23658,8
 100 LET Level=1: LET Score=100000
 110 LET Lives=5: BORDER 5
 120 LET l=17: LET c=17: LET v=3: BORDER 5
 130 PRINT INK 1;AT 10,0;" GHIJ            BCD           "
 140 PRINT INK 2;AT 12,0;" BCD            GHIHIJ     "
 150 PRINT INK 3;AT 14,0;" GHIJ      EF                 "
 160 PRINT INK 4;AT 16,0;"BCD      GHIHIHIJ       "
 170 PRINT INK 5;AT 18,0;"       GHIJ       BCD     "
 180 PRINT INK 5;AT 20,0;"  EF           GHIHIJ     "
 190 IF Level>1 THEN PRINT INK 6;AT 11,0;" GHIJ              GHIHIHIJ   "
 200 IF Level>2 THEN PRINT INK 2;AT 21,0;"             GHIHIHIHIHIHIJ   "
 210 IF Level>3 THEN PRINT INK 1;AT 16,0;"           GHIHIHIHIHIHIJ   "
 220 IF Level>4 THEN PRINT INK 6;AT 13,0;"HIJ                GHIHIHIHIHI"
 230 IF Level>6 THEN PRINT INK 3;AT 19,0;" GHIHIHIHIHIHIJ   "
 240 IF LEVEL>6 THEN PRINT INK 2;AT 17,0;"GHIHIHIHIHIHIJ   "
 260 GO SUB 300
 250 GO TO 9000
 300 PRINT #1; INK 7; PAPER 1;AT 0,0;"      Score ";Score;"   Level ";Level
 310 PRINT #1; INK 7; PAPER 1;AT 1,0;"      High  ";High;"   ";"Lives  ";Lives
 320 PRINT #1; INK 7; PAPER 1;AT 0,12;"0";AT 1,12;"0"
 350 RETURN
5000 RESTORE 5100
5010 FOR c=1 TO 16: READ c$
5020 FOR r=0 TO 7: READ x
5030 POKE USR c$+r,x: NEXT r: NEXT c
5100 DATA "A",125,129,65,60,120,66,60,0
5105 DATA "B",3,31,69,127,255,3,63,7
5110 DATA "C",240,254,858,255,255,255,255,254
5115 DATA "D",3,7,189,255,254,207,135,3
5120 DATA "E",0,31,63,95,258,7,63,15
5125 DATA "F",0,129,185,247,254,231,195,128
5130 DATA "G",0,60,78,207,268,127,3,127
5135 DATA "H",3,16,53,258,255,253,240,192
5140 DATA "I",192,240,262,255,865,63,15,3
5145 DATA "J",3,19,60,248,240,240,224,192
5150 DATA "K",8,42,28,127,28,42,5,0
5155 DATA "L",0,0,0,219,0,0,0,0
5160 DATA "M",1,2,0,8,16,0,64,128
5165 DATA "N",128,64,0,16,8,0,2,1
5170 DATA "O",0,0,0,0,0,0,0,0
5200 RETURN
6000 PRINT INK 1; PAPER 6;AT 0,10;"GONE FISHING"
6010 PRINT AT 2,0;"  In this game you have to catch""fish BCD EF using the latest ""electronic fishing rod and hook"
6020 PRINT AT 6,2;"You can control the position""of the hook IKJ by use of the""following keys"
6030 PRINT AT 11,6;"UP-----------'Q'";AT 13,6;"DOWN----------'A'";AT 15,6;"LEFT-------------'O'";AT 17,6;"RIGHT------------'P'"
6040 PRINT #1;AT 0,0;"PRESS ANY KEY TO CONTINUE": GO SUB 7000
6050 CLS
6060 PRINT INK 1; PAPER 6;AT 0,10;"GONE FISHING"
6070 PRINT AT 2,2;"You catch fish by a clean""strike on the nose of the fish""(a hit on the body will lose you""a life!)"
6080 PRINT AT 7,2;"If you hit an electric eel""GHIHIJ GHIHIHIHIHIHIHIJ GHIHIHIJ""on any part of it's body then""you will cause a short circuit""and loose another life!"
6090 PRINT AT 13,0;"When you have caught all the""fish on the first level, then""more eels appear and the rate of""scoring increases"
6100 PRINT AT 18,2;"There are seven levels in the""game and the highest scorer is""shown in the hall of fame!"
6110 PRINT #1;AT 0,0;"PRESS ANY KEY TO CONTINUE": GO SUB 7000
6120 CLS
6130 PRINT INK 1; PAPER 6;AT 0,10;"GONE FISHING"
6140 PRINT INK 6; PAPER 2;AT 11,0;"          GONE FISHING          ";AT 13,0;"     © RONALD WILTSHIRE 1984    "
6150 PRINT #1; FLASH 1; INK 7; PAPER 1;AT 0,0;"  PLEASE WAIT WHILE I DRAW THE ";AT 1,0;"
```

```
FISHERMAN FOR YOU!
5200 RETURN
7000 FOR g=1 TO 4e4
7010 RESTORE 7060
7020 FOR f=1 TO 42. READ a  READ
 b  BEEP .3*a,b
7030 IF INKEY$="" THEN GO TO 700
0
7040 RETURN
7050 NEXT F
7060 DATA 1,0,0,1,0,2,5,1,1,1,3,
1,1,1,3,1,1,2,3
7070 DATA 1,5,5,1,0,2,0,1,1,1,3,
1,1,1,3,1,1,2,3
7080 DATA 1,0,1,3,1,1,1,1,1,1,1,
1,2,6,0
7090 DATA 1,5,1,3,1,1,1,1,1,1,1,
1,2,5,5
7100 DATA 1,8,1,0,2,5,1,0,0,5,1,
5,1,5,5,1,-4,1,-8,3,1
7110 NEXT g
8000 PLOT 219,163. DRAW 6,2,-0.8
 DRAW 5,-1,-0.3  DRAW 6,-3,-0.3
 DRAW 3,2,0.5
8010 DRAW -19,2,0.3  PLOT 222,16
5  DRAW 4,6,0.3  DRAW 4,0,-3.1
DRAW 2,0,-3.1
8020 DRAW 4,-2,-3,1. DRAW 0,-4
PLOT 238,160  DRAW -6,-14,-1.4.
DRAW -5,-1,-1.4
8030 DRAW -3,2,-1.4. DRAW -3,11,
-1.1  DRAW 1,6,-1.1  PLOT 227,16
3  DRAW 1,-3,4.2
8040 DRAW 0,3,3.9  PLOT 232,162
 DRAW 1,-3,4.3  DRAW 0,3,3.2. PL
OT 230,162  DRAW -3,-4
8050 DRAW 4,0  PLOT 233,152  DRA
W -0,0,-1.4  PLOT 239,160  DRAW
0,-4,-3.0  PLOT 221,150
8060 DRAW 0,3,-3.6  PLOT 223,147
 DRAW -9,-9: DRAW -8,-8,0.4  DR
AW 4,-3,0.4  DRAW 4,6
8070 DRAW 7,1,-1.3. DRAW 16,6,1.
9  DRAW -2,6,1.9. PLOT 233,145.
DRAW 0,-4,-1.1
8080 DRAW -10,2,-1.1  DRAW -2,0,
-1.1  PLOT 215,126  DRAW 4,-3  D
RAW 6,6,-0.4
8090 DRAW 8,-3,-0.4. DRAW 19,4,1
.1  DRAW -7,12,1.1  PLOT 219,182
 DRAW -3,-4,-0.8
8100 DRAW -13,2,-0.8  DRAW 3,3,-
1.2  DRAW 5,1,-1.2  DRAW 2,0,3.2
 PLOT 209,129
8110 DRAW -0,0,-0.8. DRAW 0,-3,4
.4  DRAW 4,-2,2,2  PLOT 221,145
 DRAW -7,4,9.2  DRAW 1,-5
8120 DRAW 4,0  PLOT 222,140. DRA
W -9,1  DRAW -0,-1,2.3
8130 PLOT 214,148  DRAW -90,16.
DRAW 89,-10  PLOT 205,143  DRAW
-8.1,-3.2  DRAW -31,0,-0.8
8140 DRAW -27,0,-0.6  DRAW -16,4
,-0.6
8150 PLOT 210,130  DRAW 5,-0  PL
OT 203,143  PLOT 226,161  PLOT 2
31,160
8160 PLOT 124,160  DRAW 0,-32
8300 PRINT AT 6,15,"K"
8310 PRINT AT 6,14,"N",AT 8,16,"
N",AT 5,14,"L",AT 6,16,"L",AT 7,
14,"MON
8320 FOR w=6 TO 7  PRINT INK 0,A
T w,20,"[redacted]"  NEXT w
8340 FOR f=0 TO 31  PRINT INK 6,
AT 9,f,"A"  NEXT f
8360 FOR F=1 TO 32  RANDOMIZE US
R 23760  BEEP .01,-6+F. NEXT F
8380 POKE 23776,32
8390 FOR f=1 TO 32  RANDOMIZE US
R 23760  BEEP .01,26+F  NEXT F
8400 PRINT AT 11,0,"
                  ",AT 13,0,"
"
8500 POKE 23776,110
8560 RETURN
9000 FOR f=1 TO 4e4
9017 LET v=v+.09  IF v>40 THEN L
ET v=40
9025 PRINT AT l,c;" "
9030 RANDOMIZE USR 23760
9035 BEEP .006,v
9040 IF INKEY$="Q" THEN LET l=l-
1
9046 IF INKEY$="A" THEN LET l=l+
1
9000 IF INKEY$="O" THEN LET c=c-
1
9050 IF INKEY$="P" THEN LET c=c+
1
9060 IF l<10 THEN LET l=10
9062 IF l>20 THEN LET l=21
9064 IF c<0 THEN LET c=0
9066 IF c>27 THEN LET c=27
9070 PRINT AT l,c,"K"
9080 IF POINT (c*8+8,(21-l)*8+3)
=1 THEN GO TO 9260
9090 IF POINT (c*8-1,(21-l)*8+3)
=1 THEN GO TO 9200
9100 NEXT f
9200 FOR F=1 TO 100  OUT 254,000
. OUT 254,224  NEXT F
9210 FOR r=0 TO 8  PRINT AT r,0,
"  "  NEXT r
9218 LET Lives=Lives-1. IF Lives
<1 THEN GO TO 9500
9220 GO TO 120
9260 IF POINT (c*8+8,(21-l)*8+4)
=1 OR POINT (c*8-1,(21-l)*8+4)=1
 THEN GO TO 9200
9300 FOR b=0 TO 7. BORDER b. BEE
P .01,2*b  NEXT b
9310 FOR b=0 TO 7  BORDER b  BEE
P .01,16+2*b  NEXT B  BORDER 5
9315 FOR f=1 TO 20  BEEP .01,30.
 NEXT f
9320 PRINT AT l,c+1,"  "
9330 PRINT INK (l-10)/2+1,AT (l-
10)/8,0,"BCD"
9360 LET Score=Score+Level*(41-I
NT v)
9370 GO SUB 300
9380 IF ATTR (0,0)>56 AND ATTR (
1,0)>56 AND ATTR (2,0)>56 AND AT
TR (3,0)>56 AND ATTR (4,0)>55 AN
D ATTR (8,0)>38 THEN GO TO 9400
9390 GO TO 9000
9400 FOR f=1 TO 10  BEEP .010,20
 NEXT f
9410 FOR f=1 TO 13: BEEP .010,16
 NEXT f
9420 LET Level=Level+1
9430 FOR r=0 TO 8  PRINT AT r,0,
"  "  NEXT r
9440 IF Level>7 THEN GO TO 9500
9460 GO TO 120
9500 FOR f=10 TO 21  PRINT AT f,
0,"
  "  NEXT f
9510 PRINT FLASH 1, INK 2, PAPER
 6,AT 10,11,"GAME OVER",AT 13,9,
"HIGHEST SCORE"
9515 PRINT AT 15,7,High,AT 15,7,
"0",AT 15,10,"by ",n$
9520 PRINT FLASH 1, INK 1, PAPER
 6,AT 16,5,"YOU HAVE SCORED ",Sc
ore,AT 16,21,"0"
9525 IF Score<=High THEN GO TO 9
550
9530 PRINT FLASH 1, INK 6, PAPER
 1,AT 20,7,"WHAT IS YOUR NAME?"
 INPUT n$
9535 IF LEN n$>11 THEN LET n$=n$
(1 TO 11)
9540 PRINT AT 15,7,Score,AT 15,7
,"0",AT 16,21,"      ",AT 1
5,21,n$,AT 15,5,"
        ",AT 20,7,"
"
9550 LET High=Score
9560 PRINT FLASH 1, INK 1, PAPER
 6,AT 16,5,"YOU HAVE SCORED ",Sc
ore,AT 16,21,"0"
9565 PRINT #1, INK 7, PAPER 1,AT
 0,0,"        ANY      TO      AG
AIN   ",AT 1,0,"  PRESS      KEY
   PLAY
9570 GO SUB 7000
9580 FOR f=10 TO 21  PRINT AT f,
0,"
  "  NEXT f
9590 PRINT #1, INK 1 AT 0,0,[redacted]
9600 GO TO 100
```

Gone Fishing
by R Wiltshire

Open Forum

Key Bleep

on Vic 20

This program shduld work on all Vic 20's, expanded or not What the program does, is to produce a beep every time a key is pressed The program works by wedgeing a small machine code program at memory address 828 which checks to see it a key is pressed, If so this produces a beep This machine code program is automatically called 50 times every second by the computer's own interrupt routine When the program has finished it then jumps to the computer's own interrupt routine in *Rom*

```
Ø BEM KEYBOARD BEEP BY S.BATTLE
1 S=828
2 READ A:IF A=999 TBEN SYS 828:END
3 POEE S,A:S=S-1:GOTO 2
4 DATA 12Ø,169,73,141
5 DATA 2Ø,3,169,3
6 DATA 141,21,3,88
7 DATA 96,169,15,141
8 DATA 14,144,165,197
9 DATA 2Ø1,64,24Ø,8
1Ø DATA 169,19Ø,141,12
11 DATA 144,76,191,234
12 DATA 169,Ø,141,12
13 DATA 144,76,191,234,999
```

BASIC LISTING

```
1 REM 32 Spaces
2 LET A$ = "Ø6A83EBØD7D7D7D71ØFAC9"
3 FOR A = Ø TO 1Ø
4 POKE 16514+A , 16*CODE A$ (A*2+1)
   + CODE A$ (A*2+2) - 476
5 NEXT A
```

M/C LISTING

```
16514  Ø6 A8    .START   LD B,A8H
16516  3E 8Ø             LD A,8ØH
16518  D7       .CONT    RST 1ØH
16519  D7                RST 1ØH
1652Ø  D7                RST 1ØH
16521  D7                RST 1ØH
16522  10 FA    .LOOP    DJNZ . CONT
16524  C9                RET
```

Key Bleep
by S Battle

Microradio

GW6JJN

Morse signals

Good news for all you ZX81 owners out there who would like to receive morse code on an unexpanded — yes, 1K — machine All that is needed is the computer, a radio receiver capable of receiving morse and a new program from Pinehurst Data called *Morse Code Reader* Since I am no morse code expert I gave the program to a friend who is one of the best morse men I know Mike Martin G4VRQ Here is what Mike had to say

"The program loaded correctly first time when the copyright notice appeared on the screen A screened audio lead was connected between the radio receiver and ZX81, ie. from the external speaker socket on the radio to the ear socket of the computer

"It was found that the best kind of signal for the program was a morse signal of tone and clarity similar to that of the Greenwich time signal Weak signals were not decoded very well and, as the program notes suggest, two diodes were connected in series with the audio lead Once a good signal was found, the program worked very well In fact, over a weekend, several contacts were successfully decoded on the two-metre band

"The screen display was pleasing and easy to read with a blank line inserted between each line of text making it easy for the operator The program responded to quite large variations in the speed of the received morse code, this being controlled by the Fast and Slow keys on the ZX81 keyboard After trials on the relatively quiet two metre band, the computer was connected to a short wave receiver (a Trio with a dipole aerial) and morse code signals were monitored on various short wave amateur bands The problem with the short wave amateur bands is that they are very crowded and more than one signal can be heard on any given frequency Even with extensive filtering, the program did not do too well under these conditions.

"Given a good clear signal and there are plenty available on the commercial and weather station areas of the short wave bands the program does very well indeed As the morse is received it is translated to ordinary alphanumeric characters on the screen This, of course, applies to any language so don't be too surprised if you are confronted with French or German"

Pinehurst must be congratulated on their achievement, fitting a morse decoder into 1K Brian Baily the programmer tells me he is working on a RTTY version which I suspect might take a little more memory The tape costs £7.00 and is available from Pinehurst Data Studios, 69 Pinehurst Park, West Moors, Wimbourne, Dorset BH22 0BP So if you are wondering what to do with your ZX81 plug it into a radio receiver and the world is yours Thanks to Mike for conducting the test

Ray Berry GW6JJN

This series of articles is designed for radio and microcomputer enthusiasts alike If you have any queries that you want answered, hints and tips to share or topics that you would like to see covered, write to Ray Berry, Microradio Popular Computing Weekly, 12-13 Little Newport Street, London WC2H 8LD

Open Forum

Poly Tunnels

on Memotech

This is a small program to demonstrate the Logo type graphis on the MTX machines by drawing n-sided polygons producing a tunnel of the shape as it does so

Program Notes

10	Calls and clears a graphics screen.
20	Asks for the number of sides.
30	Works out the angle between each side
40	Sets the A angle preset to 0 degrees
50-60	Works out the maximum side length
70-100	Sets up the loops and draws one shape
110	Recalculates side length and shape position
1000-1010	Waits for key press before re-running.

```
10 VS 4: PAPER 15: INK 1: CLS
20 INPUT "NO. OF SIDES ? ";X
30 LET A=((2*X-4)*90)/X: LET A=180-A: LET A=2*PI*(A/360)
40 ANGLE 0
50 LET SL=200
60 IF (X*SL)/PI>191 THEN  LET SL=SL-1: GOTO 60
70 PLOT 128-(SL/2),D
99 FOR Y=1 TO 10
100 FOR N=1 TO X: DRAW SL: PHI A: NEXT
110 LET D=(SL*X)/PI: LET SL=SL-(SL/5): PLOT 128-(SL/2),95-((D-(D/5))/2): NEXT Y
1000 IF INKEY$="" THEN  GOTO 1000
1010 RUN
```

Poly Tunnels
by P Clark

Arcade Avenue

A blockbuster

It is ironic that with its image as a machine for serious programmers and all its associations with education, some of the very best copies of arcade games are on the BBC B computer. First of all there were the excellent versions of many familiar games that were released fairly quickly by Acornsoft itself, but recently it has turned its hand to more original games and the banner has passed to independent companies such as Aardvark who have produced in *Zalaga* the best unoriginal game I have seen in many a month.

Called *Galaga* in the arcades this game is a fine derivative of the Galaxian theme and Aardvark's version is as good as could ever be expected in the home. The only machine that has game copies equalling the quality of the BBC is, not surprisingly, the Atari micros, although with the determined effort of Atarisoft to capture the market for home versions of their games we may see some interesting new developments on other machines. Unfortunately, the frighteningly high price of Atari software may mean that such games go unheralded by all but the most dedicated games player.

If you are looking for arcade copies it is interesting to speculate why the Commodore 64 appears to be lacking in good quality versions of some shoot-em ups despite the high standard of much of the original software. The answer, I feel, must lie in the fact that the machine, despite having many excellent features, has neither the graphics ability or more importantly the speed of the BBC. The really breathtaking programs for the Commodore 64, and indeed the Spectrum, are those that are written to fully exploit the qualities of the machines and avoid their deficiencies such as *Revenge of the Mutant Camels* or *Manic Miner*. Conversely, these huge and complex multi-level games may never be seen on the memory limited BBC, or indeed in view of the time required to play them in the arcades, although *Dragons Lair* may yet prove me wrong in that respect.

A recent development and one that will be welcomed by the buyer as well as being good for the sales figures is the simultaneous release of the same game for several different micros, often produced from one master programme written on a mini or main-frame computer. We may possibly see the end of the tedious six month wait for a successful program to make the transition from one machine to another, usually becoming outdated in the process. However, I am inclined to wonder how much the restraints of the hardware will limit this trend. It would be a shame to see the various faults of the BBC, Commodore, Spectrum, Oric and the like compounded to produce games that will fit them all with minimal adjustment.

All machines need their blockbuster games that show off their best features and it is unreasonable to expect these to travel well. No doubt this is why Jeff Minter's zappy Vic 20 games have received such a tepid response once translated to the nearly soundless Spectrum. This may perhaps be a failing of the MSX standard computers — despite all the wonderful extra features by any one manufacturer to make a machine stand out, the shared software will have no room for excellence — it can only be as good as the basic standard will allow.

Tony Kendle

The Arcade Corner is a new section for anyone who enjoys playing arcade games. If you have any comments, from playing tips on difficult games or programs you'd particularly like to praise (or blame!) then write to Tony Kendle Arcade Avenue *Popular Computing Weekly*, 12 13 Little Newport Street, London WC2R 3LD



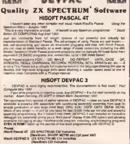
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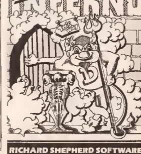
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Tony Bridge's Adventure Corner



Victoriana

Whenever a Vic 20 owner writes to me it is almost always on one of two subjects (sometimes both at once!) — one, why do I not mention the Vic 20 and two, for Help in a Scott Adams adventure. One or two of you, however, have sent in your thoughts on other Vic adventures. Marilyn Boyce of Douglas, Isle of Man, writes:

"Why haven't you reviewed any Vic20 adventures lately? [*See what I mean? — TB*] There are quite a few about. What do you do all week? Terminal has a series of adventures which must have something for everyone.

"*Curse of the Werewolf* is the worst of the lot. Objects are randomly distributed throughout the locations for every game. Consequently, it is possible to play for hours before the *staff* (needed to kill the *zombie* to get into the castle) is found. If the werewolf happens to be outside the castle door, it is possible to kill him without even going inside.

"Then you must rescue the girl — I didn't bother! I was already fed up. A few primitive sounds slow down the response time. Death comes without warning, and there is no *Save Game* facility. I didn't like it at all.

"*Magic Mirror* on the other hand is very enjoyable. There are lots of locations including a pink palace, a large subterranean cavern and a garden. I always feel I've had value for money if there are plenty of locations to explore. The adventure itself is easy enough for beginners, with enough problems to keep the experienced adventurer interested.

"*Rescue from Castle Dread* needs 16K expansion and makes very good use of the extra memory. It's an excellent adventure set first in an enchanted forest — you must avoid rats and find you way through flooded tunnels to kill a dragon. Then fly a balloon to Castle Dread where you must rescue the princess from a demon (rescuing a prince would make a nice change, or better still, rescuing a demon from a prince!). I must admit to not finishing this adventure. I think there is a bug in the program (isn't that what everybody says when they're stuck?) [*Yes. I have heard that before — TB*]

"I received *Quest of Merravid* (Martech Games) for Christmas and what a disappointment! Advertised as an adventurer's adventure I had expected to be engrossed by it for weeks — instead it didn't even outlast the turkey! There were some nice humorous touches which I liked, but that didn't make up for it being too easy."

Graham Shaw, in his letter last week, mentioned Mr Valentine's list, and while we're on the subject of Vic20 adventures, Mr Valentine has written an up-date to his previous list. "First, though, I have a hint for all those playing *Crush, Crumble & Chomp*: a good combination which I have found is Machismo-Combat-Washington which scored 2318 points. Perhaps other readers have found better combinations?

"Anyway, on with what you prefer, TB. *Golden Apples of Zeus* by Romik — this describes itself as "A Text Adventure for the Beginner", and you couldn't be far wrong. For those of you who are interested, there are 5 (yes, five) locations, and the whole adventure can be done in seven (yes, 7) moves. It also takes about 15 minutes to load. The idea is that you have to get some apples off a tree without dying. Other things you might find are men sowing salt, herbs, a stick, a rock and Cerberus (the three-headed dog). Using a bit of ingenuity and a bit of junior-school Bible knowledge, this should be no test for the average adventurer.

"*Rescue from Castle Dread* [*See also Marilyn Boyce's Letter — TB*]. This is more like it! A good adventure for the experienced adventurer. Put it this way, I couldn't get on it. Having reached a nasty-looking warrior, I couldn't get past him (got any ideas TB? [*How about some hints, Marilyn?*]). Up to there, however, I found the adventure very interesting with plenty of locations and, of course, a ring. Otherwise you can meet witches, trolls, dwarves and giant rats, which all sounds rather fun (and is!). Well worth buying this one — very challenging.

"Finally, *Four Gates to Freedom* (Phoenix). This is an innovative idea which includes an arcade game as well as the adventure. Unfortunately, you have to finish the game first (which I can't do!). It may be worth a look at, and I might be able to say more about it if TB knows the code. [*Unfortunately, I don't know this one, can anyone help? I don't actually like this idea, unusual though it is — it penalises those of us who aren't so quick on the trigger. I have to say, though, that the arcade games in this program and* Joker's Wild *from the same company are excellent. In case you're stuck in* Joker's Wild *I can help you crack the code — just think of the suits of the cards!*]

"Finally, a plea for help. How do you finish *Voodoo Castle*?"

Following the instructions in the book is essential, but also make sure that you have the doll with you, and that both you and the Count are wearing the lucky charms.

This series of articles is designed for novice and experienced Adventurers alike. Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter. So, if you have an Adventure you want reviewed, or if you are stuck in an Adventure and cannot progress any further, write to Tony Bridge, Adventure Corner, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 3LD.

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Peek & Poke

KEY FAILURE

Keir Thorpe, 96 Woodlands Avenue, West Byfleet, Weybridge, Surrey, writes

Q **Next month I will have had my Spectrum for two years. Recently ink on many of the keys has been fading and the *9*, *0* and *I* keys have stopped working. Having removed the loose metal top-casing, I discovered that the dots of white wire on the membrane are no longer over each other.**

I have heard of a company that supplies new mats and membranes. Please could you supply their address and an idea of their prices?

A This creeping paralysis of the keyboard is unfortunately not a new phenomena to the Spectrum. My first machine expired this way – fortunately under guarantee.

TV Services of Cheston Mill, Frenches Road, Cambridge, offer a fixed price service to repair your Spectrum. It will probably cost you about £19 to have your machine fixed.

THIS YEAR'S MODEL

Lap Ki Kan, 176 Wandsworth Road, London, writes

Q **I am thinking of getting a CBM 64, but I was told by a friend that there were three models. Could you tell me which one is the best?**

A The Commodore 64 is likely to have undergone a number of modifications since its initial launch. If you buy a machine from one of the large retail outlets, such as Boots, you can be virtually certain to get an up to the minute machine. In any case any differences between the "models" is likely to be very small.

RADIO INTERFERENCE

Robin Grimmer, 48 York Road, New Barnet, Herts, writes

Q **My father owns an Osborne 1 connected to an Epson MX80 printer, which are both earthed. The Osborne interferes strongly with VHF radio — and the printer, though not so strongly. I am sure that it is not mains interference as I can pick it up on a battery radio. Therefore, we require some sort of screening.**

Do you know of a firm which could do this? It must be cheap and quick as my father uses the machines every day for work. Alternatively, can you recommend any real metallic paint that we could use ourselves for screening?

A I would not suggest that you do the screening job yourself unless you know what you are doing. I would suggest that you contact North Amber at Canberry House, Tolworth Close, Tolworth, Surrey. They specialise in the maintenance of Osborne and Epson equipment.

CALL CNARGE

B Allen, Perth, Scotland, writes

Q **I was very interested to see the article on the Prism VTX 5000, so I have sent off for details. Could you tell me if the device runs up the phone bill as a normal call would? Is the device good value? Do you need an interface?**

Also, how exactly do you translate machine code into Basic and vice versa?

A Glad to see that you are taking the sensible step of getting further information before you part with your cash. Now down to business: the answers to your questions are — Yes, Yes, No. And finally – with difficulty.

To summarise, converting from machine code to Basic is not really very practical and to go from Basic to machine code is best done by a compiler.

PACMAN CONFUSED

William Bennetts, Springfield Villa, Upton Cheyney, Bitton, Bristol, writes

Q **I was disappointed when, having switched from a Spectrum to a BBC, I could not find an equivalent to the Spectrum's *Screen$* and *Attr*. What can I do? Is there any memory location I could read so that my pacman can distinguish between eating walls and dots?**

A Without delving deep into *Oswrch* and *Osword* calls the answer is no, not really. One possible way out for you would be to use the *Point* statement. This enables you to check the colour of the screen at the specified point. This statement does not work in the same way on the Spectrum, so that may be why you have not tried it yourself.

POKES FOR THE VIC

Tom Aiken, 29 Lonsdale Road, Bournemouth, Dorset, writes

Q **In an article on the CBM64 a few weeks ago you published the *Pokes* to stop a program from listing, and to disable the Run Stop button. Although the *Poke* for stopping listing works on the Vic the Run Stop one does not. What is the *Poke* for this in the VIC?**

A To disable Run Stop you need to *Poke 37150* with 2. To disable Run Stop/Restore you need to *POKE 808* with *100*.

If you wish to stop your program being *Saved* then *Poke 802* with *0* and *Poke 803* with *0*.

NOT RUNNING

P J Shaw, 305 Basingstoke Road, Reading, writes

Q **I have an Issue 1 Spectrum with Interface 1 and microdrives. I am experiencing problems with a number of published programs, which, when run, lock up the computer. I do not use any program which has the machine code *Poked* into Rem statements.**

Is it the combination of the Issue 1 Spectrum and microdrives that is the problem?

A You have probably hit the nail on the head. It is quite likely that the m/c programs use the memory locations used by the microdrives. This will cause the programs to lock up the computer. If you want to run these programs then you will have to relocate the code further up the Ram.

TAPE LOAOING ERROR

Gethin Thomas of Oswestry, Shropshire, writes,

Q **I have a loading problem with my 48K Spectrum. When I Save programs I have written and try to reload them, a message appears on the screen 'R tape loading error'. The programs were free of mistakes when loaded, so where did the mistakes come from?**

A It's difficult to be sure of your problem, but I can offer some general advice. Firstly, have you tried Verifying your programs? This should tell you whether they have been saved correctly — always use it on even the shortest saved program.

Either the tape recorder is unreliable, or you are changing the volume setting — use 3/4 volume and full treble.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Phil Rogers and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke, PCW*, 12-13 Little Newport Street, London WC2R 3LD.

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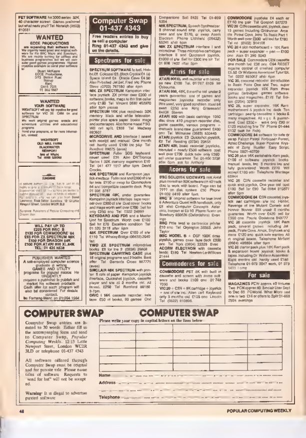
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ADVENTURE HELPLINE

Micro. *48k Sinclair Spectrum*
Adventure *Artics Espionage Island*
Problem: *How do I get into the boat and what does the grafitti mean. P S I've completed planet of death?!*

Name *Mr S P Huxtable*
Address *27 Moorfield Road, Withycombe Exmouth Devon Ex8 3QN*
Micro. *ZX Spectrum 48k*
Adventure *Espionage Island*
Problem *I've got the plans I am in the volcano How can I stop getting shot by the guard in the guards room. How can I get off island*

Name *Stewart Melvitene*
Address: *13 Flax lands Court, Diags Estate, Volverhampton UU3 4LX*
Micro *ZX Spectrum 48k*
Adventure. *The Hobbit*
Problem *How do you escape from the butler in the elvenkings dungeon and get outside?*

Name *Richard Sheridan*
Address: *68 Cissbury Ring South, Finchley N12 7BO*
Micro: *ZX81*
Adventure: *Black Crystal*
Problem: *After loading the second map I find it impossible to get off the first screen*

Name: *David Wood*
Address *4 Livingstone Road, Pokesdown, Bournemouth Dorset*
Micro *Tandy colour computer*
Adventure *Raaka-tu*
Problem *How do I get across the oriental rug without falling into the pit Is the gem on the other side of the door I have been trying for 12 months "Please"*

Diary

Event	Venue	Dates	Admission	Organisers
Software 84 (Trade only)	Earls Court London SW5	June 5-7 10.00am-6.00pm	£3.00 on door (free tickets in advance)	Reed Exhibitions Surrey House Throwley Way Sutton Surrey 01-643 8040
5th International Commodore Computer Show	Novotel Hammersmith London	June 7-8 10.00am-6.00pm June 9 9.00am-6.00pm	£2.50 adults £1.00 children £5.00 family tickets	Granard Communications 4 Belgrave St. London SW1 01-683 6711
The Computer Fair	Hall D Earl's Court London	June 14 10.00am-8.00pm (trade and press only) June 15-16 10.00am-6.00pm June 17 10.00am-6.00pm	£3.00 adults £2.00 children & OAPs	Reed Exhibitions, Surrey House Throwley Way Sutton, Surrey 01-643 8040
Micro Trade 84 (Trade only)	Barbican London	July 4-6 10.00am-6.00pm	Free	Montbuild Ltd 11 Manchester Sq London W1 01-486 1951

New Releases

IN FLIGHT

Flight is a flight simulation program for the ZX81 which competes quite favourably with Psion's famous offering

The objective is to fly and land a small aircraft using the information provided by instruments on a cockpit display — the tv screen

There are two other displays — a 3D view of the runway when you draw near to it and a map which shows the position of plane, hills, beacons and compass directions

Obviously with a ZX81 the graphic effects are not going to be staggering but in fact the real art of a flight simulation program revolves around how like a real plane it is to 'fly' and here the program scores wall

Program	*Flight*
Price	*£4 95*
Micro	*ZX81*
Supplier	*Flight* *James Paton* *2 The Avenue,* *Falhngs Park* *Wolverhampton*

TOWERING

The Inferno is the latest adventure from Richard Shepherd software and I think the program is its best yet. Technically it's roughly similar to *Urban Upstart* with simple but effective graphics and fairly sophisticated language analysis The step forward is the introduction à la *Hobbit* of characters to whom you can communicate — in this case Virgil is the Thorin character who follows you around like a strey dog and who wanders off with useful objects from time to time

Your objective is to escape from the underworld which is divided into nine 'circles' none of them being the sort of place Club Mediterranée would run package tours to although I suppose you could windsurf on the Styx though — and you should get a nice tan with the heat, hey actually.

I don't think those people who usually find Richard Shepherd adventures easy will find the same here — even with a cheat sheet I was quickly set upon and savaged by a bunch of Harpies

All the graphics are suitably Gothic and do a pretty fair (if slightly toned down) impersonation of Hieronymus Bosch, and for £6.50 — you can't go wrong Highly recommended

Program	*The Inferno*
Price	*£6 50*
Micro	*Spectrum*
Supplier	*Richard Shepherd* *23-25 Elmshott* *Lane* *Cippenham* *Slough* *Berks*

BIZARRE

Bath Time is weird Weird in the way that only Hungarian software can be weird It is also the least macho game I have ever seen — the most cataclysmic thing that can happen is a fish dying — important if you happen to be the fish in question I suppose, but not a patch on the destruction of the Earth

The idea is this There are a fish and a swan in a bathtub, you control a fairy who can open and close sluice gates Using the gates you must keep the water level adjusted so that the water does not get too high (the swan will scarper) or too low (the fish cops it)

This is made difficult by an elephant who drinks water and an obnoxious little boy who keeps tipping it in so your fairy is kept pretty busy. My fairy control proved fairly ropey and I can't comment on what might occur in later stages of the game The music is the sort of thing you might expect so hear in the lobby of a large impersonal, international hotel

The cover blurb suggests that the key feature of the game is its niceness and certainly *Bath Time* is awesomely inoffensive Bizarre

Program	*Bath Time*
Price	*£7 95*
Micro	*Commodore 64*
Supplier	*PSS* *452 Stoney Stanton* *Road* *Coventry* *CV6 5DG*

Pick of the week

BEES TO THE RESCUE

Antics is the follow up to Bug-Byte's moderately successful *Birds and the Bees* and has Boris Bee trying to rescue Barnabee his cousin from a dreadful fate in the hands (feet) of some ants

Rescuing Barnabee requires Boris to negotiate dozens of different mazes à la *Jet Set Willy* with 'flutter' replacing the 'jump' command

Boris must maintain his pollen and stamina levels by visiting flowers from time to time — bashing into ants or thorns saps his strength

Although the game has good graphics and sound (continuous and possibly even better done than in *Miner*) its real strength is the adventure elements — some parts of the maze look impenetrable but parts of the walls crumble if you fly into them or if you trigger secret openings by visits to certain flowers — it isn't a matter of dodge everything

If you're into the *Miner/Jet Set* school of sophisticated arcade game you won't regret spending (although it's still too expensive, Bug-Byte) £6 95 for this

Program	*Antics*
Price	*£6 95*
Micro	*Spectrum*
Supplier	*Bug Byte* *Mulberry House* *Canning Place* *Liverpool L1 8JB*

NO TO NUKES

Attack on Windscale is another in Phoenix's twin cassette packages where you must master an arcade style game to gain the access code to an adventure This one is for the Commodore 64

The arcade part is pretty much your standard blast the aliens, the excuse here being that they are blitzing the Windscale atomic power station The baddies defend themselves with 2 flying saucers which hurl bombs at you.

The adventure concerns your attempts to find a quartz prism which can prevent the reactor from going critical It has fairly rudimentary graphics for each location and uses what you might call sophisticated single keypress entry — there are a wide variety of options at some locations

Your adventuring is on a strict time limit — the seconds before the reactor detonates flit away as you stop to think The final stage occurs if you manage to find the prism within the allotted time (2 hours) — you must find a jet which takes you to the alien's sonic transmitter and destroy it using the prism Technically unsophisticated but good fun

Program	*Attack on* *Windscale*
Price	*£9 95*
Micro	*Commodore 64*
Supplier	*Phoenix Software* *Spangles House* *116 Marsh Road* *Pinner* *Middlesex*

SPIDER'S LAIR

Although Interceptor Micros have some pretty impressive and elaborate programs coming out for the Commodore 64 these days it was one of their simpler offerings I was most taken with

Spider and the Fly has a beautifully simple idea at its centre — you are a spider and must trap flies by weaving a web around them, to complete each screen you must nab a requisite number of flies

Your spider existence is threatened by a tracking hand which can knock you off your web or kill you and cans of insecticide which are lethal if they squirt

Although it's an arcade game a good deal of tactical thinking is required alongside the usual quick reactions on the joystick.

Program	*Spider and the Fly*
Price	*£7*
Micro	*Commodore 64*
Supplier	*Interceptor Micro's Lindon House The Green Tadley Hampshire*

ATLANTIS

Praise be for the *Quill* This machine code adventure writer is enabling a lot of people who have plenty of imagination but not much programming skill to produce entertaining and compulsive adventures

A case in point is *Atlantis Adventure* by M&J Software This is an adventrue with 150 locations, 90 objects and a vocabulary of 200 words for a mere £4 95

You are stuck on the fabled island and must search around looking for treasure and a way of escape I found that even in the first few locations there was plenty to do and one pressing problem to solve, ie, your hunger As good a text adventure as you'll find anywhere — if it were on the BBC it'd probably come in a big box for £9 95

Program	*Atlantis Adventure*
Price	*£4 95*
Micro	*Spectrum*
Supplier	*M & J Software 7 Charnor Road New Parks Estate Leicester*

UPSTAIRS DOWNSTAIRS

Staircase Stampede has Helpful Horace and Horrible Harold battling it out on a 3D staircase in a variety of *Amidar* with overtones of that funny game with the boot and the bomb, whose title I can never remember

The idea is to paint the staircase and defuse a bomb whilst avoiding Harold and his friends Any game with alliterative names for the goodies and baddies earns my immediate distaste but to be fair, the graphics, sound effects and other features of the game are all pretty good.

Program	*Staircase Stampede*
Price	*£7 50*
Micro	*BBC*
Supplier	*Comsoft Computer Software 7 Roman Drive Leeds West Yorkshire LS8 2DR*

CHECKMATE

Chess II is a fairly sophisticated Chess program for the Oric 1 and Atmos with a choice of response times from 5 seconds to 5 hours

The game is a direct follow up to Tansoft's original chess program improving upon it with faster responses and a wider range of opening moves

Other features include the option to change sides and set up chess problems, there is even speech synthesis — the computer says something like crecatzzzzaeghpzzzzz ssshhhhshahs if you make a wrong move

Program	*Chess II*
Price	*£9 99*
Micro	*Oric/Atmos*
Supplier	*Tansoft Units 1 & 2 Cambridge Techno-Park Newmarket Road Cambridge CB5 8PB*

KIDS STUFF

Childsplay is a cassette of ten educational style games for the BBC B The programs variously teach mathematical and language skills

In some cases the link between the program and education is nebulous in the extreme *Hangman* is just *Hangman* whichever way you look at it.

To be fair, others of the games here like *Whichword*, which has the child trying to choose the right word for a sentence from a group of words that look similar, can safely be called educational

Probably a mixed bag educationally speaking, but could be worth a look

Program	*Childsplay*
Price	*£9 95*
Micro	*BBC B*
Supplier	*Polarsoft 40A Queen Street Hitchin Herts SG4 9TS*

WHO VOTES WINS

Mastertronic, you will doubtless have heard, is selling its software titles for a mere £1 99 Since this is, in many cases, a quarter of the normal selling price of cassettes are they any good? I mean what's wrong with them?

The answer is, that whilst the games I looked at were relatively simple — you're out going to get an *Alice in Wonderland* or a *Jet Set Willy* — they are certainly good value for money and with luck should mean the gradual demise of expensive second rate software

The Election game is for the Commodore 64 and is a strategy based on, as you might suppose, general elections It's for up to four players with each taking a different party and deciding how much to spend on each constituency

There are various simple graphics and graphs throughout the game and I enjoyed it It would be OK at £5 or £6, at £1 99 it's a bargain

Program	*The Election Game*
Price	*£1 99*
Micro	*Commodore 64*
Supplier	*Mastertronics 48 George St London W1*

New Releases is designed to let people know what software is coming on to the market If you have a new game or utility which you are about to release send a copy and accompanying details to New Releases, Popular Computing Weekly, 12-13 Little Newport Street WC2R 3LD



Top 10

Atari

1 (3) Zaxxon (Data soft)
2 (8) Warlock (Calisto)†
3 (3) Rally Speedway (Adventure International)*
4 (–) Airstrike 2 (English)
5 (7) Pooyan (Datasoft)
6 (1) Solo Flight (Microprose)‡
7 (–) Jet Boot Jack (English)
8 (–) Saga 5 (Adventure International)‡
9 (5) O'Riley's Mine (Datasoft)
10 (–) Saga 4 (Adventure International)‡

*Cartridge †32K cassette ‡48K cassette
(Figures compiled by Calisto Computers, Birmingham 021 200 5444)

BBC*

1 (1) Beebs (Acornsoft)
2 (6) Blagger (Alligata)
3 (5) Fortress (Pace)
4 (–) White Knight (Acornsoft)
5 (7) Football Manager (Addictive Games)
6 (4) Beeb Tank (Superior)
7 (2) Spooks and Spiders (Software Invasion)
8 (10) French (Acornsoft)
9 (9) JCB Digger (Acornsoft)
10 (8) Firth (Acornsoft)

*All model B
(Figures compiled by Vecit Management, Ipswich 0473 89181)

Vic 20

1 (3) Dush Sheet (Mastertronic)
2 (–) Chariot Race (Micro Antics)
3 (–) Computer War (Thorn EMI)
4 (2) Sub Commander (Thorn EMI)
5 (–) Flight 015 (Ferranti Davenport)
6 (8) Tank Commander (Thorn EMI)
7 (7) Crazy Kong (Interceptor)
8 (5) Tower of Evil (Thorn EMI)
9 (4) Snooker (Visions)
10 (–) Galaxe Designer (Galactic)

Figures compiled by Boots/Websters)

Dragon 32

1 (10) Cuthbert in Space (Microdeal)
2 (1) Chuckie Egg (A & F)
3 (–) Dragon Chess (Oasis)
4 (7) Kriegspiel (Beyond)
5 (3) Eightball (Microdeal)
6 (–) Scramble (Microdeal)
7 (2) Hungry Horace (Melbourne House)
8 (–) Sprite Magic (Knight)
9 (9) Bouza Bnabs Scramble (Microdeal)
10 (–) Sprint (Oasis)

ZX81*

1 (10) Book Crystal (Carnell)
2 (–) Dizzy Kong (PSS)
3 (4) Flight Simulation (Psion)
4 (7) 1K Chess (Artic)†
5 (–) Asteroids (Quicksilva)
6 (8) Space Raiders (Psion)
7 (5) Scramble (Quicksilva)
8 (9) Defenders (Quicksilva)
9 (10) Invaders (Quicksilva)
10 (–) Krypton Ordeal (Novus)
Martel House (Novus)

*All 16K except where shown. †1K
(Figures compiled by Boots/Websters)

Spectrum*

1 (3) Jet Set Willy (Software Projects)
2 (1) Fighter Pilot (Digital Integration)
3 (7) Chequered Flag (Psion)
4 (3) Blue Thunder (Foundry Systems)
5 (–) Orbest Captain (Allanson)
6 (8) Pogo (Cheer)
7 (10) Gnasher (Blackertronic)
8 (–) Bullseye (Mastertronic)
9 (–) Wheelie (Microsphere)
10 (4) Alis Atan (Ultimate)

*All 48K
(Figures compiled by W H Smith and Son, London)

Commodore 64

1 (7) BMX Racers (Mastertronics)
2 (8) Space Pilot (Mastertronics)
3 (–) Superpipeline (Taskset)*
4 (–) Rotors goes Ski-ing (Melbourne House)
5 (–) Hover Attack (Durrell)
6 (–) Snooker (Visions)
7 (–) Pyramid (Fantasy)
8 (–) Ambush (Virgin)
9 (–) 3D Speed Duel (DK'Tronics)
10 (8) Black Hawk (Thorn EMI)

*Disc.
(Figures compiled by Boots/Websters)

Books

1 ( ) Sinclair QL companion, Allen (Pitman)
2 (–) Step by Step Programming Spectrum Book 2, Graham (Darling Kindersley)
3 (–) 50 Programs for commodore 64, Erskine et al (Pan)
4 (–) Commodore 64 Programmers Reference Guide, Commodore (Commodore)
5 (–) Very Basic Book Spectrum, Elkenshaw and Scrafield (Century)
6 (–) Spectrum Sound and Graphics, Money (Granada)
7 (–) A Guide to Playing the Hobbit, Elkan (Melbourne House)
8 (–) Step by Step Programming BBC Book 1, Graham (Dorling Kindersley)
9 (–) Step by Step Programming BBC Book 2, Graham (Darling Kindersley)
10 (7) 100 Programs for the spectrum, McLean and Gordon (Prentice-Hall)
Two titles tied for 6th position

(Figures compiled by Bookwise)

Book Ends

TAPE

Since many a brand new computer is wrongly accused of not *Loading* and *Saveing* when, in fact, the tape recorder is what's at fault it could be worth spending £2 95 on *The Micro User's Book of Tape Recording*

This slim book discusses what tape recorders do, how they are used by a computer, how they can be kept in good condition and, most important of all, ways of improving the reliability of *Saveing* and *Loading*. A nice idea and I believe the only book of its kind

Book	*The Micro User's Book of Tape Recording*
Price	*£2 95*
Micro	*General*
Supplier	*Duckworth The Old Piano Factory 43 Gloucester Crescent London NW1*

PUZZLES

Little to say about *101 Puzzles to Solve on your Microcomputer* except that if you like puzzles and have a computer then this is definitely the book for you

The puzzles range from codes to maths and take in computer concepts like number crunching and probability and most important of all the answers are in the back of the book

Book	*101 Puzzles to Solve on your Microcomputer*
Price	*£4 95*
Micro	*General*
Supplier	*Harrap 19-23 Ludgate Hill London EC4M 7PD*

ADVENTURE

Beyond the Arcade is, despite its title, primarily about adventure and strategy games. As such it's not the first but it does have a few elements which single it out

The book is reasonably thorough and, well, reasonably up to date (most recent game is probably *Valhalla*). All sorts of variants on the basic themes are discussed — strategies, play by mail, and the classic games for various computers are analysed in detail. I was also pleased to see a lengthy section on *Dictator* which I've always thought was underrated.

Book	*Beyond the Arcade*
Price	*£6 95*
Micro	*General*
Supplier	*Mezaic John Wiley & Sons Baffins Lane Chichester PO19 1UD*

This Week

Program	Type	Micro	Price	Supplier
Alphamix	Ut	Aquarius	£7.95	Oasis
Crossword Compiler	Ut	Aquarius	£1.99	Oasis
Electric Organ	Ut	Aquarius	£1.95	Oasis
Flying	Arc	Aquarius	£1.99	Oasis
Gunnery	Arc	Aquarius	£1.95	Oasis
Keyboarder	Ut	Aquarius	£1.99	Oasis
Mastercode	Ut	Aquarius	£1.99	Oasis
Paintbox	Ut	Aquarius	£1.99	Oasis
Rollerball	Arc	Aquarius	£1.99	Oasis
Sketch	Ut	Aquarius	£1.99	Oasis
Solfors	S	Aquarius	£1.99	Oasis
Symmetry	Ed	Aquarius	£1.99	Oasis
Brainstorm	Arc	BBC	£7.95	Virgin
9k.Vid	Ut	BBC	£14.95	Pro Supply
Sea Adventure	Ad	BBC	£7.95	Virgin
Revelation	Arc	Commodore 64	£7.95	Softek
Bumpers	Arc	Dragon	£7.95	Dragondata
Facemaker	Ed	Dragon	£10.95	Dragondata
Fruity	Arc	Dragon	£7.95	Dragondata
Logo	Ed	Dragon	£29.95	Dragondata
Number Chaser	Ed	Dragon	£10.95	Dragondata
Sea Quest	Ad	Dragon	£7.95	Dragondata
Shape Up	Ed	Dragon	£10.95	Dragondata
Shenanigans	Ad	Dragon	£7.95	Dragondata
Table Adventure	Ed	Dragon	£10.95	Dragondata
Blockbuster	S	Spectrum	£5.95	Compusound
Carpet Capers	Arc	Spectrum	£5.95	Terminal
Front Loop	Arc	Spectrum	£9.95	NTD
98 Wong's Laundry	Arc	Spectrum	£6.95	Artic
Solar System	Ed	Spectrum	£9.95	Eaglesoft
Space Command	Arc	Spectrum	£5.95	Virgin
Tasprint	Ut	Spectrum	£9.90	Tasman
The Golden Quest	Ad	Spectrum	£7.50	Printout
Treasure Hunt Tool	Ut	Spectrum	£4.95	G W Components
United	S	Spectrum	£5.95	CCS
Bears in the Quest	Arc	ZX81	£3.95	Unicorn
Climber	Arc	ZX81	£3.95	Unicorn

Key Ad — adventure/Arc — arcade/Ed — education/
S — strategy-simulation/Ut — utility

This Week is a new section that covers all the new software coming on to the home micro market each week. All suppliers should send details of their new programs to This Week, Popular Computing Weekly, 12-13 Little Newport Street London WC2H 3LD



Mr Floppy comes to town

I don't know how you spent your last bank holiday but I spent mine behind a stand at the Midland Computer Fair rummaging through back issues of *Popular Computing Weekly*, in search of obscure programs. Of course, on the rare occasions I was successful in unearthing the right magazine, the prospective purchaser would decide s/he hadn't got enough pocket money left to buy it.

Mind you, I had a better time of it than Mr Floppy. Mr Floppy was an outrageous black cardboard sandwich, on one side of which was drawn a huge smiling face. His dismal inhabitant, a hard up Birmingham Polytechnic student (names have been witheld to protect the innocent), surveyed the world from a small 6" square, gauze covered grill — which gave him such a narrow angle of view that he had to swing his entire body round to get a look at anything other than objects directly to the front of him.

He wore cream gloves on hands which protruded awkwardly from the side of his bizarre costume, and cream tights on legs which bowed painfully. This was because he bore (there really is no other word for it) on his feet enormous foam rubber boots which forced his knees apart and produced a peculiar lolloping gait (he had to lift each foot high into the air to make any progress — imagine walking in giant heavy snowshoes and you get the idea).

On the first day of the show he got off to a good start displaying something close to enthusiasm, accosting all and sundry with leaflets extoling the virtues of Mr Floppy floppy discs (don't tell me you didn't make the connection). But, by lunchtime, Mr Floppy resembled Mr Saggy.

He visibly drooped. He trudged between the stalls (not easy when the aisles are about five foot wide and full of people, and you're around three foot from side to side) on his never ending circuit of the exhibition hall. Clearly, the sandwich board was supported on his shoulders in some weird and wonderful fashion, because by that stage his hands grasped either corner in a desperate effort to take off some of the weight.

Watching for Mr Floppy to pass by on his rounds was the only really interesting thing at a (even more than usually) tedious fair. Visitors to the show treated him abominably. They stood on his feet, punched him in the stomach (or what would have been his stomach if he'd had one) and covered up his visor.

All this his alter ego, the Mr Floppy underneath it all, stood with lugubrious stoicism. He would console himself, in dulcet Brummy tones, with the fact that at least he wasn't recognisable under his layers of cardboard and none of his friends could see the depths to which he had sunk for the grand sum of £15 a day.

You may wonder where all this is leading. What, I can hear you cry, is the meaning of all this drivel?

Well just this. Mr Floppy was streets ahead of any other marketing device at the show. Why? Because he was funny.

Now, the computer industry is woefully short on humour. Such wit as it commonly displays is usually confined to unsubtle rude word routines concealed in adventure games. Its characters are generally wooden stereotypes, and its ability to humanise its products is nearly non-existent.

Mr Floopy Automata — and, possibly the Barbara Woodhouse Lotus 1.2.3 advertisements — are rare examples of the industry making itself truely user friendly. There should be more of them.

Gail Courtsell

Prime example

Puzzle No 109

For many centuries mathematicians have been trying to devise a formula for generating prime and only prime numbers.

All attempts have so far failed — although it

/23578 Ho Hum!

must be admitted that some of the efforts are surprisingly good.

Try the formula $p = n^2 + n + 41$

This gives a prime result when n equals all positive integers up to and including 39, but fails when $n = 40$

$$40^2 + 40 + 41 = 1681 = 41^2$$

Another formula is

$$p = n^2 - 79n + 1601$$

Taking the values of n from 1 to 100, which values do *not* produce primes?

Solution to Puzzle No 104

In the program the four loops *A* to *D* are used to simulate all possible throws of four dice. Each total increments that value in the array by one to keep a tally of the scores obtainable.

```
10 DIM SCORE(252) 20 FOR A = 1 TO 6 30 FOR B = 1 TO 6 40 FOR C = 1 TO 6 50 FOR D = 1 TO 6 60 T = (((A B) + C) + D) 70 SCORE(T) = SCORE(T) + 1 80 NEXT D 90 NEXT C 100 NEXT B 110 NEXT A
```

The array is then checked to determine which throws occur most frequently, that is those which should be chosen in order to increase the chances of winning. Note the use of nested brackets in Line 60 to ensure that the operations are carried out in the order required and *not* in the computer's order of precedence.

The best pair of numbers to choose are discovered to be 24 and 36, which both occur 41 times each out of the 1296 possible throws.

Winner of Puzzle No 104

The winner is Kevin Powis, Old Meeting Street, West Bromwich, who receives £10.

Rules

If the puzzle can be sensibly solved using a computer then the winner will have included a listing of the program used to find the correct answer. The closing date for entries to Puzzle No 109 is June 15.

The Hackers







...but seriously
AUTOMATA
PIMANIA – the cult adventure that's for real!
16K ZX81 ££ BBC 32K £10 Dragon 32 £10 Spectrum 48K £10
DARTZ- animated pub game + spectacular free hit music Spectrum 48K £5
PI EYED – the comedy cartoon arcade game starring the PiMan Free protest disco record Spectrum 48K £6
PI BALLED – A triumph of the arcade programmer's art Starring the PiMan Free offensive Reggae music. Spectrum 48K £6
MORRIS MEETS THE BIKERS – exciting arcade fun as man on TV Outrageous free doo-wop record Any Spectrum £6
YAKZEE – Bruddy wonderfurr game of ruck and skirr An oriental masterpiece for Dragon 32 plus Spectrum 48K £5
GO TO JAIL – Play the game Find out what all the fuss is about cookie Spectrum 48K £6
OLYMPIMANIA – He's back! He's going for gold! He's sober! Free National Anthem on the flipside Spectrum 48K £5
THE PIMAN'S GREATEST HITS – amazing stereo L P cassette £3
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24-HOUR CREDIT CARD HOTLINE (0705) 735242
MR CROUCHER AND MR PENFOLD, THROUGH NO INGENUITY OF THEIR OWN, HAVE GONE TO JAIL
GOR, I'M FED UP
HOME-SICK?
NO HERE-SICK!
WELL, OCCUPY YOURSELF BANG YOUR TIN MUG ALONG THE BARS AGAIN!
I CAN'T THE WARDER TOOK IT AWAY AND GAVE ME A PAPER CUP WHAT ARE YOU DOING?
BREAKING OUT COMING?
ALL RIGHT
AFTER ALL – WE WANT TO GET THE NEW 'DARTZ' GAME UNDERWAY
YEAH – BUT THEY WERE GOING TO LET US OUT THIS AFTERNOON ANYWAY
TIME AND TIDE WAIT FOR NO MAN!
SHORTAGE OF SPACE PRECLUDING THE POSSIBILITY OF THE OLD 'TUNNELING-INTO-THE-GOVERNERS OFFICE' CHESTNUT, MEL AND CHRISTIAN ESCAPE, AND ARE SOON HEADING FOR THE PIMAN'S DIGS.
SCREEECH
BUT...
WHAT D'YOU MEAN, THE FAT GUYS GOT THE GAME?
SHAKITY SHAKITY SHAKE
THEY TAPPED INTO OUR COMPUTER ONE NIGHT AND PINCHED THE 'DARTZ' PROGRAM!
WELL, LET'S GO ROUND AND PINCH IT RIGHT BACK AGAIN!
BUT SURELY THEY'LL MAKE A FUSS
THEN WE'LL HAVE TO BEAT 'EM UP!
MEL CROUCHER, SHAME ON YOU! TO THINK THAT SOMEONE DESCRIBED YOUR CAUSE AS NOBLE THE OTHER WEEK. WE'LL GO AND ASK THESE MEN POLITELY FOR THE GAME'S RETURN – JUST YOU AND I, SO THERE'LL BE NO ROUGH STUFF
OH – ALL RIGHT!
AT THE OFFICE OF TUBBY O'BESE AND DARYL MCBARYLL, CHEATERS AT PUB GAMES AND PIRATES OF COMPUTER PROGS
SO YOU SEE, MR O'BESE THE 'DARTZ' GAME IS OURS AND WE'D LIKE YOU TO GIVE IT BACK NOW
BELLCHH!
DIDDUN EAR YER SAY PLEASE CHEF
GRRR PLEASE!
NAH!
Grenfa Evans
WHA–
KERPUNCH!! KERTHUNK!
GRAB THE MASTER TAPE AND LET'S SPLIT!
OH I SEE – IT'S ALL RIGHT FOR YOU TO SMACK PEOPLE IN THE GOB THEN, IS IT?
OF COURSE, SILLY. I'M A GIRL! AND I HOPE EVERYONE WILL BUY DARTZ AFTER ALL THIS TROUBLE!
IT'S NON-VIOLENT FOLKS – UNLIKE THIS STRIP WHICH DOES NOT NECESSARILY REFLECT THE POLICIES OF AUTOMATA U.K.